THE

VETERINARY JOURNAL

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MAJOR GEORGE EVANS, M.R.C.V.S., F.L.S., INDIAN CIVIL VETERINARY DEPARTMENT, SUPERINTENDENT CIVIL VETERINARY DEPARTMENT, BURMAH.

Major George Henry Evans was born in Dublin on November 28, 1863, and is the eldest son of the late Major Evans, Devonshire Regiment. He was educated at the Benson School, Rathmines, Dublin, and the Royal Veterinary College, London, from where he graduated on April 1, 1884, and entered the Army Veterinary Department on August 27 the same year. He was attached to the Royal Horse Artillery at Aldershot and Woolwich until he embarked for India in March, 1885.

In India he served at Belgaum, Bellary and Bangalore, all in the Madras Presidency. He was senior veterinary officer to the Burmah column of the Chin-Lushai Expedition of 1889-90, and on the close of the operations was appointed veterinary surgeon to the Government of Burmah under the civil authorities.

In 1892 the Indian Civil Veterinary Department was formed, and Major Evans elected to join and take service under the Indian Government.

Major Evans's special services and work are: On cattle selecting duty at Hansur, Mysore, November, 1887, and at Tumcoor, 1888. Suppression of outbreak of glanders, 2nd Madras Lancers, Bellary; Veterinary charge Reserve Remount Depôt, Hosur. Detailed to investigate and report on an extensive outbreak of Surra amongst ponies of Chin Levy in September, 1890. Chin-Lushai Expedition, 1889-90. Mentioned in Despatches (*London Gazette*, September 12, 1890). Medal and clasp, and received acknowledgment of the Government of India for Veterinary Report on the Transport with

Southern Field Force. Appointed Veterinary Instructor, Burmah, June 22, 1890. Re-established Rangoon Veterinary School, August 10, 1891. Gazetted to Veterinary charge of Military Police, Burmah, September 19, 1891. Received commendation of the Local Government and of the Financial Commissioner on the successful working of the School. Received thanks of the Financial Commissioner for prompt and energetic measures taken in suppressing an outbreak of cattle disease in Upper Burma. Thanks of Government of India and Inspector-General, Civil Veterinary Department, for report on Chinese mules and their equipment. Thanks of Inspector-General, Civil Veterinary Department, for report on cattle of Burma. Thanks of Director Military Intelligence, Horse Guards, for report on elephants. Thanks of Chief Commissioner, Burmah. Promoted without examination for excellent reports and way work has been performed. Thanks of Local Government, and Committee, Rangoon Municipality, for purchase of cattle for municipality. Deputed to Muktesar, North-West Provinces, to attend Professor Koch's rinderpest demonstrations, 1897. Deputed to Penang for selection and purchase of Sumatran ponies.

Learned Societies: Member of the Royal College of Veterinary Surgeons. Coleman Prize, certificate, Royal Veterinary College, London, 1883.

Literary Contributions:—"Report on the Cattle of Burmah"; "Report on Chinese Mules and their Equipment"; "Report on Burmese Elephants"; "Materia Medica in Burmese"; "Manual of Diseases of Cattle and Ponies, Burmese"; "Treatise on Elephants"; "Monograph on the Cattle and Buffaloes of Burmah"; numerous papers contributed to Natural History Society on the Ophidian fauna of Burmah, also on various mammals, &c.

Major Evans is a well-known sportsman, having shot more big game than any man in Burmah, and, like all good sportsmen, he is a keen naturalist, and has studied the habits of animals in their natural fastnesses in the jungles of Burmah. He has travelled over every inch of the province that has been under his charge during the last eighteen years, and penetrated into places in the Shan and Arracan hills that but few white men have ever seen.

He has lately made an addition to our knowledge of natural history in the shape of an unknown specimen of a goral (wild goat) that he shot near Mount Victoria in the little known pakokko district of Upper Burmah. The new species has been named by Professor Lydekker, F.R.S., F.Z.S., *Urotragus Evansi*, after its discoverer.

Editorials.

THE NATIONAL VETERINARY ASSOCIATION.

As will be seen from our advertisement columns, the National Veterinary Association will hold its meeting this year during the last week of July at Great Yarmouth, and a very interesting and instructive programme has been arranged. Three of the four papers will be on subjects of great practical importance. They are to be prepared and the discussions opened on them by well-known men of considerable standing and experience, and should provoke a good and profitable exchange of ideas. The success of the meeting from its technical aspect is thus assured, and it is to be hoped that it will be equally successful with regard to the number of members present. The social arrangements for the meeting are in the hands of an energetic and competent committee, who are arranging an entertaining programme for our ladies and for ourselves when our work is done. The advantages of such an association are difficult to overestimate. Apart from the direct advantage of the exchange of opinions and experiences, one comes away from its meetings all the better for having met old friends and having made new ones whom one may have heard of and admired at a distance, but never met. The interest in the general professional welfare is increased, and it has a tendency to do away with the short-sighted and almost cut-throat antagonism of rivals. We hope that members will turn up in large numbers and make the "National" (which is international in character, though national in name) of 1907 as great a success as the most successful of its predecessors.

A THOROUGH SYSTEM OF MEAT INSPECTION.

THE Chicago meat scandal no doubt resulted in considerable direct injury to the export meat trade of America, but we are convinced that it was a blessing in disguise, and that the trade will profit to a much greater degree, to say nothing of the advantages to the consumer, as the result of the legislature being called upon to exercise more stringent supervision of the animals slaughtered for food purposes, and of the various processes in the preparation of such foods. The immediate result of the scare was the passing of an Act of Congress giving powers to the

Department of Agriculture to institute a more complete system of meat inspection, and to formulate regulations for the carrying out of that system. On p. 327 we reprint that portion of the Act referring to Meat Inspection, together with some of the regulations, which we think will repay careful reading. The whole system is very thorough indeed, and would serve as a useful guide to legislation on the subject in this country. One very great advantage of the detailed regulations is that uniformity of examination is established, and the same standard is in vogue in all and every part of the country. In the British Isles no system can be said to exist. In fact, the whole question is in a state of chaos; really a disgraceful state of affairs in a country often described as being the "Cradle of Hygiene."

All authorities on the subject of Meat Inspection are agreed that *ante-mortem* examination of animals intended for food is essential for efficiency. The authorities of the United States have recognised and provided for such examination of all animals intended for food before they are admitted to the establishment where they are to be slaughtered. By this means the slaughter of animals at the point of death is effectually guarded against, while doubtful animals are suitably labelled to ensure special attention when slaughtered.

Another principle which these regulations establish is of importance to us as a profession. The inspectors in charge are veterinary inspectors, as may be seen by reference to Regulations 15 and 16. In any list of conditions provided for the guidance of inspectors something must be left to their discretion, and the trust reposed in the profession is shown by the following extract from Regulation 15: "It must be understood, however, that owing to the fact that it is impracticable to formulate rules covering every case, and to designate just at what stage a process becomes loathsome or a disease noxious, the decision as to the disposition of all carcasses, parts, or organs not specifically covered by these Regulations shall be left to the veterinary inspector in charge." In addition to the veterinary inspectors, there are also stock examiners who are principally engaged in the *ante-mortem* inspection of animals, and meat inspectors, who should not be confused with the veterinary inspectors. The veterinary inspectors make final *ante-mortem* inspections, *post-mortem* examinations, and determine the fitness for food of the carcasses as the animals are killed. The meat inspectors, on the contrary, do not conduct any *post-mortem* inspections in the technical sense of the word, but are men skilled in the preparation and handling of meats. They

test meats and meat-food products to ascertain whether they are tainted, and to see that cleanliness is observed in all branches of the work. They are selected because of their practical experience in these lines, and each one has passed a searching Civil Service examination. In this country such men could be trained by the Royal Sanitary Institute and the Royal Institute of Public Health.

A very important feature of the law on the subject is the sanitary inspection. Experts in sanitation and other competent inspectors visit all establishments in which animals are slaughtered for food in order to determine the sanitary condition of the establishments. If the sanitation is unsatisfactory, the meat will not be labelled "Inspected and Passed," and consequently cannot be put on the market. In this manner good sanitary conditions are assured. Bribery and corruption are very carefully guarded against, and any violation of the provisions of the meat inspection law subjects the offender to a fine not exceeding $10,000, or to imprisonment of not more than two years, or to both such fine and imprisonment.

For the establishment of any efficient system of meat inspection in the British Isles, one of the first steps to be taken is the abolition of the numerous private slaughter-houses and the institution and compulsory use of public abattoirs. Regulations for general guidance of the inspectors should then be formulated. The principles of the American system can well be taken as a basis for that purpose, and no carcass should be allowed to be removed from the abattoir unless and until it is certified fit for human consumption and accompanied by such certificate. Then, and not till then, can we hope for protection—especially for the poorer classes, who are unable to pay big prices for their food—against the fraudulent sale of diseased and innutritious meat. We read and were disgusted with the reputed state of affairs in Chicago, but it is high time we "put our own house in order" on the question of the meat supply. Under the recent regulations the old order is changed, and Chicago in turn may point the finger of scorn at us unless we emulate their excellent example.

Two further points which we as a profession in England might pay more attention to, and which ought to be included in the collegiate course, are touched upon in a short article by Mr. Dixon, the Veterinary Inspector for Leeds. The veterinary student should certainly be grounded in the legal aspect of the question, and, secondly, in the proper methods of inspecting other foods besides merely flesh meat. Both points come within the category of the

Meat Inspector, and a knowledge of both is absolutely essential to him in his future work. The college courses at present touch upon neither, and although we would not wish to add to the burden of study which the veterinarian must undergo, yet, in order to keep pace with other bodies who train for meat inspection, it is essential that these two points are not omitted.

Original Articles.

A PLEA FOR A MORE EXTENDED TUITION IN FOOD INSPECTION IN THE VETERINARY COLLEGES.

BY JAMES A. DIXON, M.R.C.V.S., VETERINARY INSPECTOR TO THE CORPORATION OF THE CITY OF LEEDS.

THE increased attention which is at present being given to the above subject will no doubt be of benefit to our profession, if only we obtain sound and accurate ideas of our own abilities. I claim to be as staunch a supporter as anyone of the statement that the trained veterinary surgeon is the only really efficient meat inspector; but to say that all the qualified veterinary surgeons in practice to-day are capable of thoroughly examining a carcass of meat is, I think, an exaggeration. Only a short time ago I was informed, by an eminent practitioner, of a veterinary surgeon who diagnosed swine fever lesions in some intestines which, on investigation, were proved to be the intestines of a calf! What would be the dire results of such an accident if, unfortunately, it occurred through an inefficiently trained veterinary surgeon having been appointed as meat inspector? For, although many medical men are ready to recognise our abilities, no doubt exists in the minds of all veterinary surgeons who have to work with medical officers of health that, as a body, the medical profession have no love for us.

Your contributor, Mr. Watson, expresses a fear that the laymen certified by the Royal Sanitary Institute as competent inspectors of food will obtain appointments which should be given to veterinary surgeons. For my own part, I think his fear is unjustified, as, although one local authority, or its adviser, did recently think fit to demand the Sanitary Institute's certificate, in addition to our diploma, I do not remember one post which a veterinary surgeon would care to have had which has been given to a layman, and all who are practically acquainted with the work of the veterinary meat inspector, know that there are many details of the work which can be safely trusted to these trained laymen, and which a veterinary surgeon would rather be without. If anyone will take the trouble to attend the examination of the Royal Sanitary Institute in food inspection, it will be found that the candidates are examined in *all* articles of food, and also on the legal enactments which concern the food supply; and although at college I was thoroughly taught pathology and bacteriology, and given some instruction as to the practical application of

these sciences, which may be said to constitute meat inspection, I must admit that I was taught nothing of the inspection of the other articles of food, and very little of the legal enactments. I think we as a profession should be honest with ourselves, and if we want our graduates to obtain these public appointments, we should see that our students are taught food inspection *better than anyone else*, for surely the subject deserves as prominent a place in our curriculum as some of the other subjects—such, for example, as zoology.

I hope that, in spite of these unpalatable statements, I shall still have credit for being a well-wisher for our profession, but I cannot suppress the conviction that our college training in food inspection must be improved if our graduates are to obtain appointments and give satisfaction as inspectors of meat and other foods.

MEAT INSPECTION IN THE U.S.A.

EXTRACT from an Act of Congress entitled "An Act making appropriations for the Department of Agriculture for the fiscal year ending June 30, 1907," Public, No. 382, approved June 30, 1906.

THE MEAT-INSPECTION AMENDMENT.

"That for the purpose of preventing the use in interstate or foreign commerce, as hereinafter provided, of meat and meat food products which are unsound, unhealthful, unwholesome, or otherwise unfit for human food, the Secretary of Agriculture, at his discretion, may cause to be made, by inspectors appointed for that purpose, an examination and inspection of all cattle, sheep, swine and goats, before they shall be allowed to enter into any slaughtering, packing, meat canning, rendering, or similar establishment, in which they are to be slaughtered and the meat and meat food products thereof are to be used in interstate or foreign commerce; and all cattle, swine, sheep, and goats found on such inspection to show symptoms of disease shall be set apart and slaughtered separately from all other cattle, sheep, swine, or goats, and when so slaughtered the carcasses of said cattle, sheep, swine or goats, shall be subject to a careful examination and inspection, all as provided by the rules and regulations to be prescribed by the Secretary of Agriculture as herein provided for.

"That for the purposes hereinbefore set forth the Secretary of Agriculture shall cause to be made, by inspectors appointed for that purpose, as hereinafter provided, a *post-mortem* examination and inspection of the carcasses and parts thereof of all cattle, sheep, swine, and goats to be prepared for human consumption at any slaughtering, meat-canning, salting, packing, rendering, or similar establishment in any State, Territory, or the District of Columbia for transportation or sale as articles of interstate or foreign commerce; and the carcasses and parts thereof of all such animals found to be sound, healthful, wholesome, and fit for human food shall be marked, stamped, tagged, or labelled as 'Inspected and Passed'; and said inspectors shall label, mark, stamp, or tag as "Inspected and Condemned," all carcasses and parts thereof of animals found to be unsound, unhealthful, unwholesome, or other-

wise unfit for human food; and all carcasses and parts thereof thus inspected and condemned shall be destroyed for food purposes by the said establishment in the presence of an inspector, and the Secretary of Agriculture may remove inspectors from any such establishment which fails to so destroy any such condemned carcass or part thereof, and said inspectors, after said first inspection shall, when they deem it necessary, reinspect said carcasses or parts thereof to determine whether since the first inspection the same have become unsound, unhealthful, unwholesome, or in any way unfit for human food, and if any carcass or any part thereof shall, upon examination and inspection subsequent to the first examination and inspection, be found to be unsound, unhealthful, unwholesome, or otherwise unfit for human food, it shall be destroyed for food purposes by the said establishment in the presence of an inspector, and the Secretary of Agriculture may remove inspectors from any establishment which fails to so destroy any such condemned carcass or part thereof.

"The foregoing provisions shall apply to all carcasses or parts of carcasses of cattle, sheep, swine and goats, or the meat or meat products thereof, which may be brought into any slaughtering, meat canning, salting, packing, rendering, or similar establishment, and such examination and inspection shall be had before the said carcasses or parts thereof shall be allowed to enter into any department wherein the same are to be treated and prepared for meat food products; and the foregoing provisions shall also apply to all such products which, after having been issued from any slaughtering, meat canning, salting, packing, rendering, or similar establishment, shall be returned to the same or to any similar establishment where such inspection is maintained.

"That for the purposes hereinbefore set forth the Secretary of Agriculture shall cause to be made by inspectors appointed for that purpose an examination and inspection of all meat food products prepared for interstate or foreign commerce in any slaughtering, meat canning, salting, packing, rendering, or similar establishment, and for the purposes of any examination and inspection said inspectors shall have access at all times, by day or night, whether the establishment be operated or not, to every part of said establishment; and said inspectors shall mark, stamp, tag or label as 'Inspected and Passed' all such products found to be sound, healthful, and wholesome, and which contain no dyes, chemicals, preservatives, or ingredients which render such meat or meat food products unsound, unhealthful, unwholesome, or unfit for human food; and said inspectors shall label, mark, stamp, or tag as 'Inspected and Condemned' all such products found unsound, unhealthful and unwholesome, or which contain dyes, chemicals, preservatives, or ingredients which render such meat or meat food products unsound, unhealthful, unwholesome or unfit for human food, and all such condemned meat food products shall be destroyed for food purposes, as hereinbefore provided, and the Secretary of Agriculture may remove inspectors from any establishment which fails to so destroy such condemned meat food products: *Provided*, That, subject to the rules and regulations of the Secretary of Agriculture, the provisions hereof in regard to preservatives shall not apply to meat food products for export to any foreign country and which are prepared or packed according to the specifications or directions of the foreign

purchaser, when no substance is used in the preparation or packing thereof in conflict with the laws of the foreign country to which said article is to be exported; but if said article shall be in fact sold or offered for sale for domestic use or consumption, then this proviso shall not exempt said article from the operation of all the other provisions of this act.

"That when any meat or meat-food product prepared for interstate or foreign commerce which has been inspected as hereinbefore provided and marked 'Inspected and Passed' shall be placed or packed in any can, pot, tin, canvas, or other receptacle or covering in any establishment where inspection under the provisions of this act is maintained, the person, firm, or corporation preparing said product shall cause a label to be attached to said can, pot, tin, canvas or other receptacle or covering, under the supervision of an inspector, which label shall state that the contents thereof have been 'Inspected and Passed' under the provisions of this act; and no inspection and examination of meat or meat food products deposited or inclosed in cans, tins, pots, canvas or other receptacle or covering in any establishment where inspection under the provisions of this act is maintained, shall be deemed to be complete until such meat or meat food products have been sealed or inclosed in said can, tin, pot, canvas, or other receptacle or covering under the supervision of an inspector, and no such meat or meat food products shall be sold or offered for sale by any person, firm or corporation in interstate or foreign commerce under any false or deceptive name; but established trade name or names which are usual to such products and which are not false and deceptive and which shall be approved by the Secretary of Agriculture are permitted.

"The Secretary of Agriculture shall cause to be made, by experts in sanitation or by other competent inspectors, such inspection of all slaughtering, meat canning, salting, packing, rendering or similar establishments in which cattle, sheep, swine, and goats are slaughtered and the meat and meat food products thereof are prepared for interstate or foreign commerce as may be necessary to inform himself concerning the sanitary conditions of the same, and to prescribe the rules and regulations of sanitation under which such establishments shall be maintained; and where the sanitary conditions of any such establishment are such that the meat or meat food products are rendered unclean, unsound, unhealthful, unwholesome, or otherwise unfit for human food, he shall refuse to allow said meat or meat food products to be labelled, marked, stamped or tagged as 'Inspected and Passed.'

"That the Secretary of Agriculture shall cause an examination and inspection of all cattle, sheep, swine, and goats and the food products thereof, slaughtered and prepared in the establishments hereinbefore described for the purposes of interstate or foreign commerce, to be made during the night time as well as during the day time when the slaughtering of said cattle, sheep, swine, and goats, or the preparation of said food products is conducted during the night time.

"That on and after October 1, 1906, no person, firm or corporation, shall transport or offer for transportation, and no carrier of interstate or foreign commerce shall transport or receive for transportation, from one State or Territory or the District of Columbia, or to any other State or Territory or the District of Columbia, or to any place under the jurisdiction of the United States, or to any foreign country, any

carcasses or parts thereof, meat, or meat food products thereof which have not been inspected, examined, and marked as 'Inspected and Passed,' in accordance with the terms of this act and with the rules and regulations prescribed by the Secretary of Agriculture: *Provided*, That all meat and meat food products on hand on October 1, 1906, at establishments where inspection has not been maintained, or which have been inspected under existing law, shall be examined and labelled under such rules and regulations as the Secretary of Agriculture shall prescribe, and then shall be allowed to be sold in interstate or foreign commerce.

"That no person, firm, or corporation, or officer, agent, or employee thereof, shall forge, counterfeit, simulate, or falsely represent, or shall without proper authority use, fail to use, or detach, or shall knowingly or wrongfully alter, deface, or destroy, or fail to deface or destroy, any of the marks, stamps, tags, labels, or other identification devices provided for in this act, or in and as directed by the rules and regulations prescribed hereunder by the Secretary of Agriculture, on any carcasses, parts of carcasses, or the food product, or containers thereof, subject to the provisions of this act, or any certificate in relation thereto, authorised or required by this act or by the said rules and regulations of the Secretary of Agriculture.

"That the Secretary of Agriculture shall cause to be made a careful inspection of all cattle, sheep, swine, and goats intended and offered for export to foreign countries at such times and places, and in such manner as he may deem proper, to ascertain whether such cattle, sheep, swine, and goats are free from disease.

"And for this purpose he may appoint inspectors who shall be authorised to give an official certificate clearly stating the condition in which such cattle, sheep, swine, and goats are found.

"And no clearance shall be given to any vessel having on board cattle, sheep, swine, or goats for export to a foreign country until the owner or shipper of such cattle, sheep, swine, or goats has a certificate from the inspector herein authorised to be appointed, stating that the said cattle, sheep, swine, or goats are sound and healthy, or unless the Secretary of Agriculture shall have waived the requirement of such certificate for export to the particular country to which such cattle, sheep, swine, or goats are to be exported.

"That the Secretary of Agriculture shall also cause to be made a careful inspection of the carcasses and parts thereof of all cattle, sheep, swine, and goats, the meat of which, fresh, salted, canned, corned, packed, cured, or otherwise prepared, is intended and offered for export to any foreign country, at such times and places and in such manner as he may deem proper.

"And for this purpose he may appoint inspectors who shall be authorised to give an official certificate stating the condition in which said cattle, sheep, swine, or goats, and the meat thereof, are found.

"And no clearance shall be given to any vessel having on board any fresh, salted, canned, corned, or packed beef, mutton, pork, or goat meat, being the meat of animals killed after the passage of this Act, or except as hereinbefore provided for export to and sale in a foreign country from any port in the United States, until the owner or shipper thereof shall obtain from an inspector appointed under the provisions of this Act a certificate that the said cattle, sheep, swine, and goats

were sound and healthy at the time of inspection, and that their meat is sound and wholesome, unless the Secretary of Agriculture shall have waived the requirements of such certificate for the country to which said cattle, sheep, swine, and goats or meats are to be exported.

"That the inspectors provided for herein shall be authorised to give official certificates of the sound and wholesome condition of the cattle, sheep, swine, and goats, their carcasses and products as herein described, and one copy of every certificate granted under the provisions of this Act shall be filed in the Department of Agriculture, another copy shall be delivered to the owner or shipper, and when the cattle, sheep, swine, and goats or their carcasses and products are sent abroad, a third copy shall be delivered to the chief officer of the vessel on which the shipment shall be made.

"That no person, firm, or corporation engaged in the interstate commerce of meat or meat food products shall transport or offer for transportation, sell or offer to sell any such meat or meat food products in any State or Territory or in the District of Columbia, or any place under the jurisdiction of the United States, other than in the State or Territory, or in the District of Columbia or any place under the jurisdiction of the United States in which the slaughtering, packing, canning, rendering, or other similar establishment owned, leased, operated by said firm, person, or corporation is located unless and until said person, firm, or corporation shall have complied with all of the provisions of this Act.

"That any person, firm, or corporation, or any officer or agent of any such person, firm, or corporation, who shall violate any of the provisions of this Act shall be deemed guilty of a misdemeanour, and shall be punished on conviction thereof by a fine of not exceeding ten thousand dollars or imprisonment for a period not more than two years, or by both such fine and imprisonment, in the discretion of the court.

"That the Secretary of Agriculture shall appoint from time to time inspectors to make examination and inspection of all cattle, sheep, swine, and goats, the inspection of which is hereby provided for, and of all carcasses and parts thereof, and of all meats and meat food products thereof, and of the sanitary conditions of all establishments in which such meat and meat food products hereinbefore described are prepared; and said inspectors shall refuse to stamp, mark, tag, or label any carcass or any part thereof, or meat food product therefrom, prepared in any establishment hereinbefore mentioned, until the same shall have actually been inspected and found to be sound, healthful, wholesome, and fit for human food, and to contain no dyes, chemicals, preservatives, or ingredients which render such meat food product unsound, unhealthful, unwholesome, or unfit for human food; and to have been prepared under proper sanitary conditions, hereinbefore provided for; and shall perform such other duties as are provided by this Act, and by the rules and regulations to be prescribed by said Secretary of Agriculture; and said Secretary of Agriculture shall, from time to time, make such rules and regulations as are necessary for the efficient execution of the provisions of this Act, and all inspections and examinations made under this Act shall be such, and made in such manner as described in the rules and regulations prescribed by said Secretary of Agriculture not inconsistent with the provisions of this Act.

"That any person, firm, or corporation, or any agent or employee of any person, firm, or corporation, who shall give, pay, or offer, directly or indirectly, to any inspector, deputy inspector, chief inspector, or any other officer or employee of the United States authorised to perform any of the duties prescribed by this Act or by the rules and regulations of the Secretary of Agriculture, any money or other thing of value, with intent to influence said inspector, deputy inspector, chief inspector, or other officer or employee of the United States in the discharge of any duty herein provided for, shall be deemed guilty of a felony, and, upon conviction thereof, shall be punished by a fine not less than five thousand dollars nor more than ten thousand dollars, and by imprisonment not less than one year, nor more than three years; and any inspector, deputy inspector, chief inspector, or other officer or employee of the United States authorised to perform any of the duties prescribed by this Act who shall accept any money, gift, or other thing of value from any person, firm, or corporation, or officers, agents, or employees thereof, given with intent to influence his official action, or who shall receive or accept from any person, firm, or corporation engaged in interstate or foreign commerce any gift, money, or other thing of value given with any purpose or intent whatsoever, shall be deemed guilty of a felony and shall, upon conviction thereof, be summarily discharged from office and shall be punished by a fine not less than one thousand dollars, nor more than ten thousand dollars, and by imprisonment not less than one year nor more than three years.

"That the provisions of this Act requiring inspection to be made by the Secretary of Agriculture shall not apply to animals slaughtered by any farmer on the farm and sold and transported as interstate or foreign commerce, nor to retail butchers and retail dealers in meat and meat food products, supplying their customers: *Provided*, That if any person shall sell or offer for sale or transportation for interstate or foreign commerce any meat or meat food products which are diseased, unsound, unhealthful, unwholesome, or otherwise unfit for human food, knowing that such meat food products are intended for human consumption, he shall be guilty of a misdemeanour, and on conviction thereof shall be punished by a fine not exceeding one thousand dollars or by imprisonment for a period of not exceeding one year, or by both such fine and imprisonment: *Provided also*, That the Secretary of Agriculture is authorised to maintain the inspection in this Act provided for at any slaughtering, meat canning, salting, packing, rendering, or similar establishment notwithstanding this exception, and that the persons operating the same may be retail butchers and retail dealers or farmers; and where the Secretary of Agriculture shall establish such inspection then the provisions of this Act shall apply notwithstanding this exception.

"That there is permanently appropriated, out of any money in the Treasury not otherwise appropriated, the sum of three million dollars, for the expenses of the inspection of cattle, sheep, swine, and goats, and the meat and meat food products thereof which enter into interstate or foreign commerce, and for all expenses necessary to carry into effect the provisions of this Act relating to meat inspection, including rent and the employment of labour in Washington and elsewhere, for each year; and the Secretary of Agriculture shall, in his annual estimates made to Congress, submit a statement in detail, showing the

number of persons employed in such inspections, and the salary per diem paid to each, together with the contingent expenses of such inspectors, and where they have been and are employed."

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As the result of the foregoing Act having become law, a series of regulations have been drawn up and put into force for the proper inspection of meat. Those regulations include the following:—

Ante-Mortem EXAMINATION AND INSPECTION.

Regulation 13.—An *ante-mortem* examination and inspection shall be made of all cattle, sheep, swine, and goats about to be slaughtered before they shall be allowed to enter an establishment at which inspection is maintained. Said examination and inspection shall be made in the pens, alleys, or chutes of the establishment at which the animals are about to be slaughtered. The proprietors of the establishments at which the said *ante-mortem* inspection is conducted shall provide satisfactory facilities for conducting said inspection and for separating and holding apart from healthy animals those showing symptoms of disease.

All animals showing symptoms or suspected of being affected with any disease or condition which, under these regulations, would probably cause their condemnation when slaughtered, shall be marked by affixing to the ear or tail a metal tag as provided in Regulation 20.

All such animals, except as hereinafter provided, shall be slaughtered separately, either before regular slaughter has commenced or at the close of the regular slaughter, and shall be duly identified by a representative of the establishment to the inspector on duty on the killing floor before the skins are removed or the carcasses opened for evisceration.

Animals which have been tagged for pregnancy and which have not been exposed to any infectious or contagious disease are not required to be slaughtered, but before any such animal is removed from the establishment the tag shall be detached by a Department employee and returned with his report to the inspector in charge.

(*a*) If any pathological condition is suspected in which the question of temperature is important, such as Texas fever, anthrax, pneumonia, blackleg, or septicæmia, the exact temperature should be taken. Due consideration, however, must be given to the fact that extremely high temperatures may be found in otherwise normal hogs when subjected to exercise or excitement, and a similar condition may obtain to a less degree among other classes of animals. Animals commonly termed "downers," or crippled animals, shall be tagged, as provided for in Regulation 20, in the abattoir pens for the purpose of identification at the time of slaughter, and shall be passed upon in accordance with these regulations.

Post-Mortem INSPECTION AT TIME OF SLAUGHTER.

Regulation 14.—The inspector or his assistants shall, at the time of slaughter, make a careful inspection of all animals slaughtered. The head, tail, thymus gland, bladder, caul, and the entire viscera, and all parts and blood used in the preparation of meat food products, shall be retained in such a manner as to preserve their identity until after the *post-mortem* examination has been completed, in order that they may

be identified in case of condemnation of the carcass. Suitable racks or metal receptacles shall be provided for retaining such parts.

Carcasses and parts thereof found to be sound, healthful, wholesome, and fit for human food shall be passed and marked as provided in these regulations.

Should any lesion of disease or other condition that would probably render the meat or any organ unfit for food purposes be found on *post-mortem* examination, such meat or organ shall be marked immediately with a tag, as provided in Regulation 27. Carcasses which have been so marked shall not be washed or trimmed unless such washing or trimming is authorised by the inspector.

Disposal of Diseased Carcasses and Organs.

Regulation 15.—The carcasses, or parts of carcasses, of all animals which are slaughtered at an establishment where inspection is maintained, and which are found at time of slaughter or at any subsequent inspection to be affected with any of the diseases or conditions named below, shall be disposed of according to the section of this regulation pertaining to the disease or condition. It is to be understood, however, that owing to the fact that it is impracticable to formulate rules covering every case, and to designate at just what stage a process becomes loathsome or a disease noxious, the decision as to the disposition of all carcasses, parts, or organs not specifically covered by these regulations shall be left to the veterinary inspector in charge. Carcasses found, before evisceration has taken place, to be affected with an infectious or contagious disease, including tuberculosis, shall not be eviscerated at the regular killing bed or bench, but shall be taken to the retaining room, or other specially prepared place, separate from other carcasses, and there opened and examined.

(*a*) *Anthrax or Charbon.*—All carcasses showing lesions of this disease, regardless of the extent of the disease, shall be condemned and immediately tanked, including the hide, hoofs, horn, viscera, fat, blood, and all other portions of the animal. The killing bed upon which the animal was slaughtered shall be disinfected with a 10 per cent. solution of formalin, and all knives, saws, cleavers, and other instruments which have come in contact with the carcass shall be treated as provided in Regulation 11, paragraph (*h*) before being used upon another carcass.

(*b*) *Blackleg.*—Carcasses of animals showing lesions of blackleg shall be condemned.

(*c*) *Hæmorrhagic Septicæmia.*—Carcasses of animals affected with this disease shall be condemned.

(*d*) *Pyæmia and Septicæmia.*—Carcasses showing lesions of either of these diseases shall be condemned.

(*e*) *Rabies.*—Carcasses of animals which showed symptoms of rabies before slaughter shall be condemned.

(*f*) *Tetanus.*—Carcasses of animals which showed symptoms of tetanus before slaughter shall be condemned.

(*g*) *Malignant Epizootic Catarrh.*—Carcasses of animals affected with this disease, and showing generalised inflammation of the mucous membranes, shall be condemned.

(*h*) *Hog Cholera and Swine Plague.*—(1) Carcasses showing well-marked and progressive lesions of hog cholera or swine plague in more

than two of the organs (skin, kidneys, bones, or lymphatic glands) shall be condemned.

(2) Carcasses showing slight lesions which are confined to the kidneys and lymphatic glands may be passed.

(3) Carcasses which reveal lesions more numerous than those described for carcasses to be passed, but not so severe as the lesions described for carcasses to be condemned, may be rendered into lard, provided they are cooked by steam for four hours at a temperature not lower than 220° F.

(4) In inspecting carcasses showing lesions of the skin, bones, kidneys, or lymphatic glands, due consideration shall be given to the extent and severity of the lesions found in the viscera.

(*i*) *Actinomycosis, or Lumpy Jaw.*—(1) If the carcass is in a well-nourished condition, and there is no evidence upon *post-mortem* examination that the disease has extended from a primary area of infection in the head, the carcass may be passed, but the head, including the tongue, shall be condemned.

(2) If the carcass is in a well-nourished condition, and the disease has extended beyond the primary area of infection, the disposition shall be made in accordance with the regulations relating to tuberculosis.

(*j*) *Caseous Lymphadenitis.*—When the lesions are limited to the superficial lymphatic glands or to a few nodules in an organ, involving also the adjacent lymphatic glands, and the carcass is well nourished, the meat may be passed after the affected parts are removed and condemned. If extensive lesions, with or without pleuritic adhesions, are found in the lungs, or if several of the visceral organs contain caseous nodules, and the carcass is emaciated, it shall be condemned.

(*k*) *Tuberculosis.*—All carcasses affected with tuberculosis, and showing emaciation, shall be condemned. All other carcasses affected with tuberculosis shall be condemned, except those in which the lesions are slight, calcified, or encapsulated, and are confined to the tissues indicated in any one of the following five paragraphs, or to a less number of such tissues, and excepting also those which may, under paragraphs (6) and (7) below, be rendered into lard or tallow.

(1) The cervical lymphatic glands and two groups of visceral lymphatic glands in a single body cavity, such as the cervical, bronchial, and mediastinal glands, or the cervical, hepatic, and mesenteric glands.

(2) The cervical lymphatic glands and one group of visceral lymphatic glands and one organ in a single body cavity, such as the cervical and bronchial glands and the lungs, or the cervical and hepatic glands and the liver.

(3) Two groups of visceral lymphatic glands and one organ in a single body cavity, such as the bronchial and mediastinal glands and the lungs, or the hepatic and mesenteric glands and the liver.

(4) The cervical lymphatic glands and one group of visceral lymphatic glands in each body cavity, such as the cervical, bronchial, and hepatic glands.

(5) Two groups of visceral lymphatic glands in the thoracic cavity and one group in the abdominal cavity, or one group of visceral lymphatic glands in the thoracic cavity and two groups in the abdominal cavity, such as the bronchial, mediastinal, and hepatic glands, or the bronchial, hepatic, and mesenteric glands.

(6) Carcasses affected with tuberculosis, in which the lesions of the disease are located as described in any one of the preceding five paragraphs, but are slight and in a state of caseation, or liquefaction, necrosis, or surrounded by hyperæmic zones, and also those in which slight, calcified, or encapsulated lesions are found in more visceral organs or more groups of visceral lymphatic glands than are specified in any one of the preceding five paragraphs, may be rendered into lard or tallow after the diseased parts are removed. The carcasses shall be cooked by steam at a temperature not lower than 220° F. for not less than four hours.

(7) Carcasses in which the cervical lymphatic glands, one organ, and the serous membrane in a single body cavity, such as the cervical lymphatic glands, the lungs, and the pleura, or the cervical lymphatic glands, the liver, and the peritoneum, are affected with tuberculosis, may be rendered into lard or tallow after the diseased parts are removed. The carcasses shall be cooked by steam at a temperature not lower than 220° F. for not less than four hours.

(8) All condemned carcasses, parts of carcasses, or organs showing lesions of tuberculosis, shall be deposited in receptacles provided for that purpose, and shall either be tanked at once or be locked in the "condemned" room until such time as an employee of the Department can see that they are placed in the tank.

(9) All heads and other parts showing lesions of tuberculosis shall be condemned.

(*l*) *Texas Fever.*—Carcasses showing sufficient lesions to warrant the diagnosis of Texas fever shall be condemned.

(*m*) *Parasitic Ictero-hæmaturia.*—Carcasses of sheep affected with this disease shall be condemned.

(*n*) *Mange, or Scab.*—Carcasses of animals affected with mange, or scab, in advanced stages, shall be condemned. When the disease is slight the carcass may be passed.

(*o*) *Tapeworm Cysts.*—Carcasses of animals slightly affected with tapeworm cysts may be rendered into lard or tallow, but extensively affected carcasses shall be condemned.

(*p*) *Pneumonia, Pleurisy, Enteritis, Peritonitis and Metritis.*—Carcasses showing generalised inflammation of one of the following tissues—the lungs, pleuræ, intestines, peritoneum, or the uterus—whether in acute or chronic form, shall be condemned.

(*q*) *Icterus.*—Carcasses showing an intense yellow or greenish-yellow discolouration after proper cooling shall be condemned. Carcasses which exhibit a yellowish tint directly after slaughter, but lose this discolouration on chilling, may be passed for food.

(*r*) *Uræmia and Sexual Odour.*—Carcasses which give off the odour of urine or a strong sexual odour shall be condemned.

(*s*) *Urticaria, &c.*—Hogs affected with urticaria (diamond skin disease) *Tinea tonsurans, Demodex folliculorum*, or erythema may be passed after detaching and condemning the skin, if the carcass is otherwise fit for food.

(*t*) *Melanosis, &c.*—Carcasses of animals showing any disease or injury, such as traumatic pericarditis, generalised melanosis, pseudo-leukemia, &c., which causes considerable elevation of temperature or affects the system of the animal, shall be condemned.

(*u*) *Bruises, Abscesses, Liver Flukes, &c.*—Any organ or part of a car-

cass which is badly bruised or which is affected by malignant tumours, abscesses, suppurating sores, or liver flukes shall be condemned, but when the lesions are so extensive as to affect the whole carcass, the whole carcass shall be condemned.

(*v*) *Emaciation and Anæmia.*—Carcasses of animals too emaciated or anæmic to produce wholesome meat, and those carcasses which show a slimy degeneration of the fat or a serous infiltration of the muscles shall be condemned.

(*w*) *Pregnancy and Parturition.*—Carcasses of animals in advanced stages of pregnancy (showing signs of preparation for parturition), also carcasses of animals which have within ten days given birth to young, and in which there is no evidence of septic infection, may be rendered into lard or tallow if desired by the manager of the establishment, otherwise they shall be condemned.

(*x*) *Immaturity.*—Carcasses of animals too immature to produce wholesome meat, all unborn and stillborn animals, also carcasses of calves, pigs, kids, and lambs under three weeks of age shall be condemned.

(*y*) *Diseased Parts.*—In all cases where carcasses showing localised lesions of disease are passed or rendered into lard or tallow, the diseased parts must be removed before the "U.S. Retained" tag is taken from the carcass, and such parts shall be condemned.

(*z*) *Careless Scalding.*—Hogs which have been allowed to pass into the scalding vat alive shall be condemned.

(*aa*) *Dead Animals.*—All animals that die in abattoir pens, and those in a dying condition before slaughter, shall be tagged as provided in Regulation 21, and in all cases shall be condemned. In conveying animals which have died in the pens of the establishment to the tank they shall not be allowed to pass through compartments in which food products are prepared. No dead animals shall be brought into an establishment for rendering from outside the premises of said establishment.

"Retaining" and "Condemned" Rooms.

Regulation 16.—Separate compartments, to be known as "retaining rooms," or other special places for final inspection, shall be set apart at all establishments at which inspection is maintained, and all carcasses and parts marked with a "U.S. Retained" tag shall be held in these rooms pending final inspection. These rooms shall be rat proof and furnished with abundant light; the floors shall be of cement, metal, or brick laid in cement. They shall be provided with facilities for locking, and locks for this purpose will be furnished by the Department. The keys to such locks shall remain in the custody of the inspector or his assistant.

Immediately after the final inspection of carcasses and parts marked with "U.S. Retained" tags is completed, those found to be wholesome and fit for human food shall be released by the veterinary inspector conducting the inspection, who shall remove the "U.S. Retained" tags, and the carcasses shall be removed from the retaining rooms and marked "U.S. Inspected and Passed," as provided in Regulation 28.

The floors and walls of all retaining rooms shall be washed with hot

water and disinfected after diseased animals are removed, and before any "retained" animals are again placed therein.

Carcasses or parts of carcasses found on final inspection to be unsound, unhealthful, unwholesome, or otherwise unfit for human food, shall be marked "U.S. Inspected and Condemned," as provided in Regulation 28, and shall be removed from the retaining room to the "condemned" room, if not tanked within twenty-four hours.

(*a*) In each establishment at which condemned carcasses or meat food products are held for more than twenty-four hours after condemnation, there shall be provided a room entirely separate from all other rooms in the establishment. This room shall be secure and shall be provided with a lock, the key of which shall remain in the custody of a Department employee. This room shall be known as the "condemned room," and shall be kept locked at all times except when condemned meat or meat food product is being taken into or from the said room under the supervision of a Department employee.

All condemned carcasses shall be removed from retaining rooms within twenty-four hours after they are condemned, except in questionable cases, when they are held pending the decision of the inspector in charge. Condemned carcasses shall not be allowed to accumulate, but shall be removed from the "condemned" rooms, treated with colouring substances, or otherwise treated, as provided in Regulation 18, paragraph (*b*), and tanked within a reasonable time after condemnation. Carcasses of diseased animals which are eviscerated in the retaining room or in the specially prepared place under the provisions of Regulation 15, shall, unless passed, be removed immediately either to the "condemned" room or to the tank.

Regulation 17—*Bruised Parts.*—When a portion of a carcass is to be condemned on account of slight bruises, which cannot be properly removed until the carcass is chilled, the carcass shall be marked with a "U.S. Retained" tag and placed in the retaining room. After chilling, the affected portion shall be cut out, marked "U.S. Inspected and Condemned," and removed to the tank or locked in the "condemned" room, and the remainder of the carcass shall be marked "U.S. Inspected and Passed."

Tanks and Tanking.

Regulation 18.—All condemned carcasses, parts of carcasses, and meat food products shall be tanked as follows:—

(*a*) After the lower opening of the tank has been securely sealed by an employee of the Department, and the condemned carcasses, parts and meat food products are placed therein in his presence, the upper opening shall be likewise securely sealed by such employee, whose duty it shall be then to see that a sufficient force of steam is turned into the tank and maintained a sufficient length of time effectually to render the contents unfit for any edible product. Tanks for this purpose shall be so located or operated that the fumes and odours therefrom shall not pervade compartments in which carcasses are dressed or edible products prepared. Wire and lead seals are provided by the Department for sealing tanks.

(*b*) A sufficient quantity of colouring matter or other substance to be designated by the Department shall be used in connection with the

tanking of all condemned carcasses, parts of carcasses, meats and meat food products, to destroy them effectually for food purposes.

(*c*) The seals of tanks containing condemned meats or the tankage thereof shall be broken only by an employee of the Department.

(*d*) If an establishment where inspection is maintained fails to permit the treatment and tanking of condemned carcasses, parts of carcasses, meats, or meat food products, as required by these regulations, the inspector in charge shall report that fact to the Department, in order that inspection may be withdrawn from such establishment.

Regulation 19.—Any meats or meat food products condemned at establishments which have no facilities for tanking shall be treated as provided in Regulation 18, paragraph (*b*), and removed to an establishment indicated by the inspector in charge and there tanked and rendered under the supervision of an employee of the Department.

LABELS, TAGS, AND BRANDS.

"U.S. Suspect" Tag.

Regulation 20.—To the ear or tail of each animal inspected under Regulation 13 which shows symptoms or is suspected of being affected with any disease or condition which, under these regulations, may cause its condemnation on *post-mortem* inspection, there shall be affixed by a Department employee at the time of inspection a numbered metal tag bearing the words "U.S. Suspect." The employee who affixes the tag shall report the number to the inspector in charge. This "U.S. Suspect" tag shall remain upon the animal until the preliminary *post-mortem* inspection at the time of slaughter. If no lesions of disease are then discovered the "U.S. Suspect" tag shall be removed and forwarded to the inspector in charge, with a report that the carcass has been inspected and passed, and the carcass shall be labelled or stamped "U.S. Inspected and Passed," as hereinafter provided.

Ante-Mortem Condemned Tag.

Regulation 21.—To the ear of each animal which is found in a dying condition or dead on the premises of an establishment at which inspection is maintained there shall be affixed by a Department employee a numbered metal tag bearing the words "U.S. Condemned." The ear bearing the tag shall not be removed from the carcass. The number of this tag shall be reported to the inspector in charge by the employee who affixes it. This tag shall remain on the condemned carcass until it reaches the tank, and immediately before tanking it shall be removed by the Department employee who is supervising the tanking and returned with a report to the inspector in charge.

STOMACH WORMS (*HÆMONCHUS CONTORTUS*) IN SHEEP.*

BY B. H. RANSOM, CHIEF OF THE DIVISION OF ZOOLOGY.

THE stomach worm of sheep, known to zoologists as *Hæmonchus contortus*, is generally recognised as one of the most serious pests with which the sheep raiser has to contend. Sheep of all ages are subject to infection, and cattle and goats as well as various wild ruminants may also harbour the parasite. The most serious effects of stomach-worm infection are seen in lambs, while full-grown sheep, although heavily infested, may show no apparent symptoms of disease. It is from these, however, through the medium of the pasture, that the lambs become infected.

SYMPTOMS AND DIAGNOSIS.

Among the symptoms which have been described for stomach-worm disease probably the most frequent are anæmia, loss of flesh, general weakness, dulness, capricious appetite, thirst, and diarrhœa. The anæmic condition is seen in the paleness of the skin and mucous membranes of the mouth and eye, and in the watery swellings which often develop under the lower jaw. A more certain diagnosis may be made by killing one of the flock and opening the fourth stomach. The contents of the fourth stomach are allowed to settle gently, and by carefully watching the liquid the parasites, if present in any considerable numbers, will be seen actively wriggling about like little snakes from $1\frac{1}{2}$ to $1\frac{1}{4}$ inches long, and about as thick as an ordinary pin.

LIFE HISTORY OF THE STOMACH WORM.

The worms in the stomach produce eggs of microscopic size, which pass out of the body in the droppings and are thus scattered broadcast over the pasture. If the temperature is above 40° to 50° F. the eggs hatch out, requiring from a few hours to two weeks, according as the temperature is high or low. When the temperature is below 40° F. the eggs remain dormant, and in this condition may retain their vitality for two or three months, afterwards hatching out if the weather becomes warmer. Freezing or drying soon kills the unhatched eggs. The tiny worm which hatches from the egg feeds upon the organic matter in the manure, and grows until it is nearly $\frac{1}{30}$ of an inch in length. Further development then ceases until the worm is swallowed by a sheep or other ruminant, after which it again begins to grow, and reaches maturity in the fourth stomach of its host in two to three weeks. The chances of the young worms being swallowed are greatly increased by the fact that they crawl up blades of grass whenever sufficient moisture—such as dew, rain, or fog—is present, provided also that the temperature is above 40° F. When the temperature is below 40° F. the worms are inactive.

The young worms which have reached the stage when they are ready to be taken into the body are greatly resistant to cold and dryness: they will stand repeated freezing, and have been kept in a dried condition for thirty-five days, afterwards reviving when moisture was added. At a temperature of about 70° F., young worms have been

* A Circular issued by the Bureau of Animal Industry.

kept alive for as long as six months, and the infection in inclosures (near Washington, D.C.) which had been pastured by infested sheep did not die out in over seven months, including the winter, the inclosures having been left vacant from October 25 to June 16. It is uncertain whether infection in fields from which sheep have been removed will die out more rapidly during warm weather or during cold weather; experiments on this point are under way, but have not been sufficiently completed for definite statements to be made. It is, however, safe to say that a field which has had no sheep, cattle, or goats upon it for a year will be practically free from infection, and fields which have had no sheep or other ruminants upon them following cultivation may also be safely used. The time required for a clean pasture to become infectious after infested sheep are placed upon it depends upon the temperature; that is, the field does not become infectious until the eggs of the parasites contained in the droppings of the sheep have hatched out and the young worms have developed to the final larval stage, and the rapidity of this development depends upon the temperature. It may be stated here that neither the eggs nor the newly hatched worms are infectious, and only those worms which have reached the final larval stage are able to continue their development when swallowed. This final larvel stage is reached in three to four days after the eggs have passed out of the body of the host if the temperature remains constantly at about 95° F. At 70° F., six to fourteen days are required, and at 46° to 57° F., averaging about 50° F., three to four weeks are necessary for the eggs to hatch and the young worms to develop to the infectious stage. At temperatures below 40° F., as already stated, the eggs remain dormant.

Methods of Preventing Infection.

It is evident from the foregoing statements that in the northern part of the United States, under usual climatic conditions, infested and non-infested sheep may be placed together in clean fields the last of October or first of November and kept there until March or even later, according to the weather, with little or no danger of the non-infested sheep becoming infected. If moved then to another clean field they may remain there nearly the entire month of April before there is danger of infection. From May 1 on through the summer the pastures become infectious much more quickly after infested sheep are placed upon them, and during May it would be necessary to move the sheep at the end of every two weeks, in June at the end of every ten days, and in July and August at the end of each week, in order to prevent the non-infested sheep from becoming infected from the worms present in the rest of the flock. After September 1 the period may again be lengthened. This method of preventing infection in lambs would require a considerable number of small pastures or subdivisions of large pastures, and in many instances could not be profitably employed, but in cases where it could be used it would undoubtedly prove very effective. By the time the next lamb crop appeared the pastures used the year before would have remained vacant long enough for the infection to have disappeared, and would consequently again be ready for use. By continuing this rotation from year to year, not only would each crop of lambs be protected from infection, but as reinfection of

the infested ewe flock is prevented at the same time, the parasite would in a few years be entirely eradicated from the flock and pastures.

If such frequent rotation is not possible or practicable, a smaller number of pastures may be utilised, after the ewe flock has been treated with vermifuges. The treatment may be given either before or after the birth of the lambs. If before, the ewes should be treated before pregnancy is too far advanced, in order to avoid possible bad results from the handling necessary in treatment. Probably the best time for treatment is late in the fall or early in the winter. The treated sheep should be placed immediately on clean pasture in order to avoid reinfection. The object of treating the ewes is to get rid of the worms with which they are infested, and thus remove the source from which the pasture becomes contaminated. If it were possible by treatment to free the old sheep entirely from stomach worms, it is evident that the lambs would remain free from infection, provided, of course, that the flock were afterwards kept on clean pasture. Unfortunately, there is no vermifuge known which can always be depended upon to remove all of the worms, but it is possible to get rid of most of them and thus greatly reduce the amount of infection to which the lambs will be exposed.

Two other methods may be suggested by which lambs can be kept free from infection with stomach worms.

(1) It is assumed that a large pasture is available which has had no sheep, goats, or cattle upon it for a year, if a permanent pasture or since cultivation if a seeded pasture. This pasture is subdivided into two by a double line of fence, and a drainage ditch is run along the alley between the two fences. At one end of the alley between the two subdivisions a small yard is constructed, communicating with each of the subdivisions by means of a gate. When the lambs are born they are placed in one of the subdivisions and the ewes are placed in the other. The small yard should be kept free of vegetation and must not drain into the lamb pasture. As often as necessary the lambs are allowed in the small yard with the ewes for suckling. The rest of the time the lambs and ewes are kept separate in their respective pastures. By this arrangement the lambs are exposed to infection only while they are in the small yard, where they may become infected either by embryos of the stomach worm present on the manure-soiled skin of the infested ewes, or by embryos picked up from the ground which has been contaminated by the droppings of the ewes. The chances of infection from the skin of the ewe are so slight that in practice this source of infection need not be considered. The danger of infection from the ground may be avoided by frequently removing the manure from the yard and keeping the surface sprinkled with lime and salt. The lambs and ewes will soon learn the way to their proper pastures, and after a few days little difficulty will be experienced in separating them each time after the lambs are through suckling.

(2) Another plan which may be followed where the climatic conditions are suitable—that is, in regions where there is a cold winter season—is that of having the lambs born at a time of year when there will be no danger of their becoming infected during the suckling period, and weaning and separating them from the rest of the flock before the advent of warm weather. Under the usual climatic con-

ditions of the State of Ohio, for instance, if the lambs are born in the latter part of October or the first of November, they may remain with the ewes on fields which have not been previously occupied by sheep, goats, or cattle, within a year—or, if cultivated fields, since cultivation—until the following March without danger of becoming infected, since the eggs in the droppings of the infested ewes will not hatch out during this time of year because of the cold weather. The use of fields not previously occupied by sheep, goats, or cattle within a year, or since cultivation, is necessary, since otherwise the fields would be already infected with young worms, which had hatched out and reached the infectious stage before the beginning of cold weather, and the lambs would consequently be liable to infection from picking up these young worms, which are not killed by cold weather after they have reached the final stage of larval development. When they are weaned the lambs must, of course, be placed on clean pasture, if they are to continue free from infection. With this method only two clean pastures are necessary, one in which the ewes and lambs are placed in the fall, and another for the lambs when they are weaned in March.

Unfortunately for this scheme, it is not always possible to have lambs born at the beginning of the winter season; but with additional clean pastures a modification of the foregoing method may be used in the case of lambs born toward the end of the winter or in the spring. In the northern United States lambs born the first of February, for example, may be kept with their mothers in a clean field or pasture until the last of March, as in the case of those born at the beginning of winter, but unlike the latter they will not then be old enough to wean. Accordingly they are not separated from the rest of the flock, but the ewes and lambs are moved together to a second clean pasture April 1. May 1 they are moved to a third clean pasture, May 15 they are moved again, and finally the lambs are weaned June 1 at the age of four months, and moved by themselves to a clean pasture. In the case of lambs born the first of March and weaned the first of July three additional clean pastures would be required for use during the month of June, and with later lambs a still greater number of pastures would be necessary.

Treatment for Stomach Worms.

Among the remedies which may be used to remove stomach worms may be mentioned coal-tar creosote, bluestone, and gasoline.

The animals to be treated should be deprived of food for twelve to sixteen or even twenty-four hours before they are dosed, and in case bluestone is used should receive no water on the day they are dosed, either before or after dosing. In drenching, a long-necked bottle or a drenching tube may be used. In case a bottle is used the dose to be given may be first measured off, poured into the bottle, and the point marked on the outside of the bottle with a file, so that subsequent doses may be measured in the bottle itself. A simple form of drenching tube consists of a piece of rubber tubing about 3 feet long and ½ inch in diameter, with an ordinary tin funnel inserted in one end and a piece of brass or iron tubing 4 to 6 inches long and of suitable diameter inserted in the other end. In use the metal tube is placed in the animal's mouth between the back teeth, and the dose is poured into the funnel, which is either held by an assistant or fastened to a

post. The flow of liquid through the tube is controlled by pinching the rubber tubing near the point of union with the metal tube. It is important not to raise the animal's head too high on account of the danger of the dose entering the lungs. The nose should not be raised higher than the level of the eyes. The animal may be dosed either standing on all fours or set upon its haunches. It has been found by experiment that if the dose is taken quietly most of it will pass directly to the fourth stomach when the animal is dosed in a standing position, and that when the animal is placed on its haunches only a part of the dose passes immediately to the fourth stomach. From this it is evident that the position on all fours is preferable, as more of the dose passes to the place where its action is required.

Great care should be used not only in dosing to avoid the entrance of the liquid into the lungs, but also in the preparation and administration of the remedy so that the solution may not be too strong or the dose too large.

Coal-tar creosote.—Good results have been obtained from a single dose of a 1 per cent. solution of coal-tar creosote. This solution is made by shaking together 1 oz. of coal-tar creosote and 99 ozs. (6 pints 3 ozs.) of water. The doses of this 1 per cent. mixture recommended by Stiles are as follows:—

Lambs four to twelve months old ...	2 to 4 ozs.
Yearling sheep and above	3 to 5 ,,
Calves three to eight months old ...	5 to 10 ,,
Yearling steers	1 pint.
Two-year-olds and above	1 quart.

Serious objections to the use of coal-tar creosote have been found in that the substance known by this name varies considerably in composition and in that some trouble is often experienced in obtaining it in many parts of the country. Complaints have been made that the substance dispensed by some druggists as coal-tar creosote has failed to give satisfactory results.

Bluestone.—Bluestone, or copper sulphate, has been extensively used in South Africa in the treatment of sheep for stomach worms, and is recommended by the colonial veterinary surgeon of the Cape Colony as the best and safest remedy. His directions are to take 1 lb. avoirdupois of pure bluestone, powder it fine, and dissolve in 42 whisky bottlefuls (9½ United States galls.*) of warm water. It is better to first dissolve the bluestone in 2 to 4 bottlefuls of boiling water, then add the remaining quantity in cold water, and mix thoroughly. This solution is given in the following sized doses:—

Lambs three months old	¾ oz.
Lambs six months old	1½ ozs.
Sheep twelve months old	2½ ,,
Sheep eighteen months old	3 ,,
Sheep twenty-four months old	3½ ,,

In making up the solution only clear blue crystals of bluestone should be used. Bluestone with white patches or crusts should be rejected. It is especially important that the bluestone and water be accurately weighed and measured, and that the size of the dose be graduated according to the age of the sheep.

* Seven English galls.—ED. *V.J.*

Gasoline.—Gasoline is one of the most popular remedies for stomach worms which has been used in this country, and has the particular advantage of being readily obtained. It is important to repeat the dose if the gasoline treatment is employed, and it is usual to administer the treatment on three successive days as follows:—

The evening before the first treatment is to be given the animals are shut up without food or water, and are dosed about ten o'clock the next morning. Three hours later they are allowed food and water, and at night they are again shut up without food or water. The next morning the second dose is given, and the third morning the third dose, the treatment before and after dosing being the same in each case.

The sizes of the doses are as follows:—

Lambs	¼ oz.
Sheep	½ ,,
Calves	½ ,,
Yearling steers	1 ,,

The dose for each animal is measured and mixed separately in linseed oil, milk, or flaxseed tea, and administered by means of a bottle or drenching tube. Gasoline should not be given in water.

Other Remedies.—Many other remedies, in addition to those mentioned here, have been used in the treatment of stomach-worm disease with more or less success. Several of the coal-tar dips on the market are recommended by the manufacturers for the treatment of worms, and the action of some of them is much the same as that of coal-tar creosote.

It is not the policy of the Department to recommend the use of any particular proprietary remedy, and as the action of some such agents is very uncertain it is suggested that, if it is desired to use them, they be used with caution, and only in accordance with the printed directions on the package. Whatever remedy is used, it is wise to test it on two or three animals before the entire flock is dosed.

AN ABNORMAL PRESACRAL VERTEBRA OF A HORSE.

BY R. G. LINTON (FROM THE ANATOMY DEPARTMENT, THE ROYAL VETERINARY COLLEGE, EDINBURGH).

DURING recent excavations carried out on the site of a Roman camp near Melrose, a large number of horses' bones were unearthed. In all, portions of the skeletons of fourteen horses were discovered.

Among this heterogenous collection was a vertebra of considerable anatomical interest. It possesses certain characteristics of both the thoracic and lumbar type; the centrum, the spinous process, the cephalic (anterior) and caudal (posterior) articular processes, and the mammillary processes are distinctly lumbar in character.

The left side presents a well-developed transverse process which, in certain respects, departs from the normal form of a lumbar process. As a whole it inclines dorsally, and, were the bone to be considered as a first lumbar vertebra, lacks the characteristic tapering at its extremity; furthermore the tip is roughened, and carries ventrally a

small bony excrescence. Turning to the right side we find the most interesting feature. There is a total absence of a transverse process, and in its stead, situated at the junction of the pedicle with the centrum, are two facets for articulation with a rib. The anterior of the two is the smaller. It is oval in shape, with its long axis antero-posterior, and is slightly concave in all directions. It is, presumably, for articulation with a part of the head of a rib. Posterior to, and separated from it by a non-articular groove 2 mm. in diameter, is the other and larger facet. It is concave in all directions, but more deeply so antero-posteriorly, and is evidently for articulation with the tubercle of a rib. The greater part of this facet looks forward. The lesser facet measures 8 mm. by 5 mm.; the larger 12 mm. by 11 mm. The larger facet is situated approximately midway between the anterior

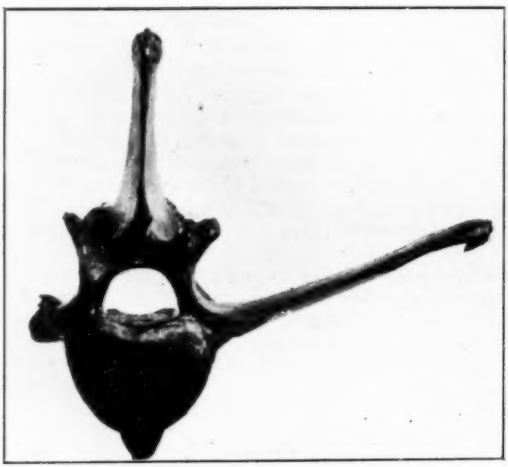

FIG. 1.—Abnormal presacral vertebra of a horse—cephalic aspect.

and posterior extremities of the body (fig. 1). Judging from the size of the facet, which I have assumed to have articulated with the tubercle of a rib, the latter was evidently a bone of no mean size. It is exceedingly unfortunate that the rib was not attainable, but from the nature of the acquisition of the bones this was obviously impossible.

The specimen is doubtless a lumbar vertebra partaking of thoracic characters. One is, I think, justified in so regarding it, in preference to assuming that it is a thoracic vertebra with lumbar characters, because, on the whole, the general form is more lumbar than thoracic. It is much to be regretted that the bone was not obtained from a complete and isolated skeleton, for there is no means of ascertaining if the number of presacral vertebræ departed from the average or not.

According to Rosenberg's theory, the condition here instanced is a reversive one, for the ilium instead of passing forwards has receded,

causing an additional half vertebra to be present in the thoracic segment of the spine.

Numerous instances are recorded by Struthers,* Dwight, Cornevin, and Lesbre † of the first human lumbar vertebra having thoracic characteristics, and of the last thoracic with a tendency to assume lumbar characters. Not infrequently a rib has been found to articulate with the end of the transverse process, and it may be that in the case now recorded a diminutive rib was present on the left side; the roughened extremity of the process pointing to such a possibility.

FIG. 2.—Abnormal presacral vertebra—lateral view.

Struthers has recorded two cases of a lumbar rib as occurring in the ox. In one case there was a movable rib supported by a transverse process on the left side; the instance being one of a supernumerary rib, since there was no serial variation of the vertebra. The second case occurred in *Bos grunniens*, with a vertebral formulæ of $C_7T_{14}L_5$, the supernumerary rib being long and well formed, with its head intervertebral.

An instance of an additional presacral vertebra with an extra pair of ribs in the horse was recently recorded from this Department by Steele.‡ In his case the vertebra was a clearly defined thoracic one, and did not show any transition to the lumbar type.

From the mass of cases recorded in anatomical literature, there can be no doubt that numerical and morphological variations in the

* Struthers, *Journal of Anatomy and Physiology*, 1875 and 1896.

† Cornevin et Lesbre, "Mémoire sur les Variations Numérique de la Colonne Vertébrale et des Côles, chez les Mammifères domestiques," *Société d'Anthropologie de Lyon*, Séance du Mai 8, 1897.

‡ Steele, "An Additional Presacral Vertebra in the Horse," *Veterinary Journal*, June, 1906. Steele gives numerous references in his paper.

spine are by no means uncommon. Naturally, examples have been found most frequently in man; and this possibly because the human spine has been greatly modified during the assumption of the erect attitude. There can be no doubt, however, that given sufficiently extensive and careful observation, other mammals would be found to possess vertebral variations of scarcely less frequency. From their importance to the morphologist, no examples should be permitted to pass unrecorded: hence the present note.

Clinical Articles.

AN INTERESTING CASE OF INTERNAL RUPTURE.

BY MAJOR CHARLES ROSE, A.V.C., JUBBULPORE.

At 1 p.m. on December 3, I was called to my sick lines to see a charger, an animal already under treatment for a minor ailment.

On arrival, enquiry showed that the horse was observed to sway for a minute or two, and had then suddenly plunged forward and was unable to rise, although efforts had been made to get him up.

The pulse was normal, temperature 99° F., but the mucous membrane of the eyes was already injected.

There was no loss of control of the hind quarters. Spasms of pain were noticed which were somewhat peculiar. The forelegs would be straightened, and what is best described as spasm of the intercostal muscles gradually came on; the lips would be drawn back and squeals emitted indicative of severe pain. This would last for about a minute, and the spasms would then die away, although pain was apparently continuous. The spasms occurred every five minutes and continued until death.

I gave a guarded opinion of "severe internal injury," and hazarded a mental opinion of "rupture of the diaphragm," which was correct, as the sequel will show, though, as one knows, anything might have happened—age brings discretion. Anodynes were prescribed.

At 5.45 p.m. I saw the horse again, and he expired a few minutes afterwards.

A *post-mortem* examination was made the following morning. On opening the abdomen several gallons of blood were released, which made me think rupture of an organ would be discovered, probably the liver, but on releasing the contents of the abdomen, a very extensive rupture of the diaphragm was seen on the left side, and a smaller one on the right side of the diaphragm. In addition, there was a rupture of the pleural covering of the outer edge of one lung about three inches square in extent; the lungs showed no sign of disease.

The theory I propound is that originally there was a rupture of the lung; bleeding naturally ensued, that the weight of blood in the chest cavity causing pressure and asphyxiation accounted for the swaying observed; that when the plunge was made the animal was on the point of death from bleeding and pressure, that the plunge ruptured the diaphragm, which relieved the pressure on the lungs, and thus enabled the animal to linger on. I cannot account for the ruptured pleural covering of the lung.

RENAL CALCULI IN A HORSE.

BY GEO. H. WOOLDRIDGE, F.R.C.V.S., PROFESSOR IN THE ROYAL VETERINARY COLLEGE, DUBLIN.

RENAL calculi in horses are not very uncommon, but it is very remarkable that the presence of a considerable number is not diagnosed until after death. No doubt in many of the cases met with on *post-mortem* examination, the horses have been the subject of recurrent attacks of "colic," the cause of which was not known.

A specimen was recently forwarded to me by Mr. T. S. Price, M.R.C.V.S., of London, which he obtained at a horse-slaughterer's yard. The horse was condemned to be slaughtered on account of an incurable chronic lameness, and there was no history whatever of anything being suspected wrong with his kidneys at any time. One

kidney was found to be quite normal while the other might almost be described as having become "petrified." The specimen, as shown in fig. 1, could scarcely be recognised as a kidney, being considerably distorted. Almost all the kidney tissue was destroyed; fragments recognisable as such, however, could be seen forming part of the dense fibrous capsule enclosing the calculi. The whole weighed 3 lbs. 12 ozs., and the calculi when removed weighed 2 lbs. 7½ ozs. The largest one, which somewhat roughly resembled the shape of a kidney, weighed 2 lbs. 4 ozs. The smaller fragments or calculi were too numerous to count, but one was almost a perfect sphere with a diameter of about an inch. Several of the smaller ones articulated by well marked facets

with the largest one. Contrary to what one might have expected at first sight, the convex border of the large calculus was towards the hilus, and the fragments and the pointed ends of the large one were in the cortical portion. My colleague, Professor Ebrill, kindly analysed

portions, and reported that the deposits consisted of about 85 per cent. of carbonate of calcium, 15 per cent. of calcium phosphate, with traces of organic matter, as mucus and albumen. There was an absence of ammonium and magnesium, and no uric acid.

NOTES ON CURRENT CASES.

BY A. J. THOMPSON, LIEUTENANT A.V.C., PESHAWUR.

CASE 1.—During the latter part of March, a Battery horse was admitted to hospital at Multan on return from exercise. I was informed that the horse was in a very serious condition and looked like bleeding to death. On viewing the horse the first part of this proved to be true at any rate. Bloody serum was running from the horse's nose, and the horse itself was in a very distressed condition. The jowl was at first slightly swollen, but the upper part of the head and neck quickly swelled up also, and on manipulation the swelling was found to be emphysematous.

At first sight this appeared to be very like anthrax, but no bacilli were to be found in the smears that were made. Multan is a dry place, but a smart shower of rain had fallen during the night, and this not infrequently precedes an outbreak of anthrax. The horse's temperature never rose above 100° F. After very minute examination a small scar was found over the trachea, and presumably the horse had been kicked, though no one had witnessed it.

After about two days the swelling slowly subsided and the horse was eventually returned to duty.

Case 2.—About 1.30 p.m. on a recent date I was hurriedly sent for to see a horse that was reported to be *in extremis*. On my arrival I found the horse exhibiting somewhat remarkable symptoms. He was wandering in circles round his box, halting every now and again to eructate through his nostrils a clear-coloured spumy mass. This was in no way tinted with gastric contents, and it was rather puzzling to discover the source of the complaint. The horse, an officer's charger, had performed his ordinary work on parade that morning, and was taken back to the bungalow and fed. Shortly after feeding these symptoms appeared. No obstruction was discoverable where the œsophagus could be examined. The horse was in a very distressed condition. An ordinary cold soapy enema was given, followed by four ounces of tincture of opium *per rectum*. Also the "sais" was put on to hand-rub down the line of the œsophagus, and an emulsion was administered by the mouth consisting of oleum lini and liquor calcis, in all four ounces. The symptoms gradually diminished in severity; another enema was given, and after about four hours the vomition had all but ceased. During the first stage the horse was vomiting through the nostrils about every five minutes and in quantities of about four ounces at a time. The horse was receiving boiled barley in the feed, and it is surmised that this had formed an obstruction in the œsophagus somewhere in its pectoral portion.

By night the symptoms has quite subsided and the horse was eagerly looking for its feed.

A CASE OF GASTROTOMY, WITH A NOTE ON THE USE OF HYDROCYANIC ACID AS AN ANTIDOTE TO CHLOROFORM.

BY R. J. FOREMAN, M.R.C.V.S., TOTTENHAM.

On March 17, 1907, a Scotch terrier, male, aged 7 months, accidentally swallowed a rubber cork, 1⅛ inch long, 1¼ inch diameter. Nothing unusual was noticed for ten days, when continuous vomiting commenced. In a couple of days the puppy was reduced to a state approaching emaciation, and the man with whom the puppy was at walk, becoming alarmed, informed the owner. The latter sent it to me on the night of March 30, and I could easily feel the cork through the abdominal walls. I gave a nutrient enema and packed him up with hay, as he was unable to lie down with comfort. On the following morning, with the assistance of my kennelman, I prepared the patient in the usual way for operation, made the incision in the abdominal wall, inserted my finger and located the cork in the stomach, as I had expected. I then discovered that respiration had ceased. After the procedure usual in such accidents respiration was re-established in about five minutes, and telling my man to watch the breathing carefully, I proceeded to withdraw the stomach and remove the cork. At this stage the business of artificial respiration, ammonia vapour, cold affusions to the head, &c., had to be resumed, as respiration again failed. After over ten minutes, there being no response to my efforts, and the heart still faintly beating, I injected intrapleurally

about 3 minims of Scheele's hydrocyanic acid (I had prepared the syringe beforehand for this purpose, if needed). To my delight the animal almost immediately started gasping, and I assisted him as much as possible, with the result that I sutured the walls of the stomach, &c., and finished the dressings, and had the satisfaction of seeing the patient revive when placed in the fresh air. I gave him a saline nutrient enema, and for three days he was kept alive with enemas of Bovril, Plasmon, milk, &c. On the second day I allowed him a few laps of chinosol water occasionally. On the third day he barked quite heartily at a cat and tried to chase it. On the fourth and fifth days I gave him Bovril, Plasmon and milk and egg to drink in small quantities and often. On the sixth day I gave a small quantity of finely minced lean beef, and gradually increased the quantity. About twenty-five days after the operation he was on a diet of hound meal, with occasional bones, raw meat, &c. One day he unfortunately got the deep collar (which I had fixed on to prevent him biting the wound) off, and removed part of the collodion dressing and also two or three sutures. I re-sutured, but had to leave drainage, as there was a little discharge. The same night he got the Hartman's wool dressing off and swallowed it, passing it a day or so later without ill effects.

On May 1 the puppy was putting on weight and looking better in coat (he had been clipped by owner for skin trouble about a month before I had him) so I advised that he was ready for removal, but through illness of owner he remained with me, and signalised the event by helping himself to some blister (hyd. biniod. cum canthar.) out of a jar in the surgery, this resulting in the first attack of sickness since the operation. He was all right again next day, and on May 3 helped himself plentifully to some farriers' hoof oil, which he upset. The result was vomition and profuse diarrhœa, both of which had quite ceased by next morning. I then wrote to the owner that he must send for him before he got into further mischief. He sent for him on May 7, and I was very pleased to see him depart in hearty and comparatively fat condition.

Remarks upon the Antidotal Effect of Hydrocyanic Acid.—I tried it some four years ago on a collie dog which had sustained dislocation of the elbow joint some days before he was sent to me. He was a powerful brute, and I had to push the chloroform to the utmost before I succeeded in reducing the dislocation. I then noticed failure of respiration, and had the greatest difficulty in getting him back to life. I tried all the usual methods, and these failing I tried a few drops of Scheele's acid (dropped from the end of my thermometer case), some on the back of the tongue and some up the nostrils, with continuance of artificial respiration. It had the desired effect, and he speedily recovered.

I noticed in both these cases that, almost immediately the Scheele's acid was administered (especially in the case of the terrier) there was one sudden violent closing of the jaws prior to the gasping, spasmodic attempts at respiration. The discovery of its powerful antidotal effect in chloroform respiratory paralysis was, I believe, first made by Professor Hobday, who, about ten years ago, published a large number of observations illustrating its value in the *Journal of Comparative Pathology* and the *Lancet*.

A CASE OF TWISTED BOWEL ACCOMPANIED BY CALCULI.

BY. A. S. HODGKINS AND SON, M.R.C.V.S., HANLEY.

An urgent message to attend a bay van gelding was received at 12 o'clock p.m. one Sunday night. The history of the case was as follows :—

The horses of the stud were fed and left for the night about 6.30, as usual. The horsekeeper who lived on the premises heard an unusual noise in the stable, and on investigation found the above-mentioned animal all in a wet perspiration, pawing continually, trying to pass fæces, and with a most haggard expression of countenance. He gave him a colic draught, and after waiting for three hours, as the pain did not subside, sent for further assistance. On our arrival, we found the temperature to be 104° F., and the pain very severe; we administered a physic ball and 3 ozs. of chloral hydrate. Before giving him an enema, we made a rectal exploration with the hand, and to our surprise found something round and hard, and with a little manipulation we were able to extricate a calculus (weight 1 lb. 7 ozs.), but in doing so unfortunately ruptured the floor of the rectum.

The horse continued in violent pain all through the night, and finally died at 1 p.m. on the following day.

The *post-mortem* examination revealed a twisted bowel and two other calculi tightly wedged in the small intestines. The rupture of the rectum did not contribute to the fatal result. The total weight of the three calculi was 3 lb. 10 ozs.

FRACTURE OF THE SUPERIOR MAXILLARY BONE IN A HORSE.

BY C. V. DALRYMPLE-HAY, VETERINARY HOSPITAL, TRICHINOPOLY, INDIA.

A bay waler gelding, 14.1, aged 7, the property of A. Butterworth, Esq., I.C.S. (District Magistrate, Trichinopoly), was admitted to the hospital, and found to have a swelling over the maxillary spine in front of the malar bone, extending downwards and deforming the face. There was a considerable unilateral nasal discharge. The pony would not allow his face to be touched. The history of the case was that the swelling had been there, but not so pronounced, at the time of purchase a few months ago

For examination the pony was thrown, and I put him under chloroform. It was decided to at once operate, and this was done by Mr. A. M. Richards, a graduate from the Bombay Veterinary College.

The part was first shaved, and an incision made over the swelling. On being exposed the bone was found fractured, and parts of it parchment like.

All the broken portions were removed, and the edges carefully scraped. There was not much hæmorrhage. The wound was cleansed antiseptically, and the skin sutured, leaving a depending orifice for dressing.

The case is doing well, but there is still a unilateral discharge.

ABNORMAL HEAD OF A CALF.

BY T. W. RUDD, CAPTAIN A.V.C. (FROM THE ANATOMY DEPARTMENT, ROYAL VETERINARY COLLEGE, EDINBURGH).

THANKS to the kindness of Mr. J. A. Carter, of Keighley, a member of the class of Anatomy in this College, we have been afforded an opportunity to dissect the head of a calf in which several interesting abnormalities were present. With the exception of its head, the calf, it is understood, was well developed, and had lived for one day after birth.

Before the skin and muscles were removed from the skull, the following conditions were observed: A bony excrescence, somewhat cone-shaped, covered with a membranous tissue, and situated between the orbits. On each side and inferior to the bony excrescence were hollow depressions, covered in the case of the right and left depressions with skin, but in the inferior depression with the membranous tissue which covered the bony excrescence. The openings of the anterior nares were smaller than normal. There was also a hare lip.

After removing the skin, muscles and periosteum from the skull, a very complicated state of the various bones was seen to exist. Viewing the skull from the front, the supero-posterior part was formed by the inter-parietal and parietal bones.

The frontal fontanelle was closed by an irregular ossicle, with which articulated laterally and inferiorly the frontal bones and bony excrescence.

The nasal bones were poorly represented, and were situated on the lateral aspect of the face; the space between them was filled in with cartilage and several small supernumerary plates of bone.

The palatine process of the pre-maxilla did not articulate with the palatine plate of the superior maxilla, but was given off at right angles to the body of the bone, and articulated superiorly with the anterior end of the vomer.

The cartilage between the nasal bones was attached to the superior edge of the vomer, and with the small supernumerary plates of bone, covered the palatine process of the pre-maxilla.

The ethmoid, with the exception of a small piece of bone about the thickness of a lead pencil, and about 2 cm. long, attached to the posterior surface of the bony excrescence, was wanting.

The vomer extended from the pre-sphenoid to the palatine process of the pre-maxilla, its superior edge was applied to the cartilage between the nasal bones and its inferior edge was free, and covered with mucous membrane.

The septal cartilage was absent, and as the inferior edge of the vomer was free, there was no division of the nasal chamber.

The depressions in the skull were due to defective development of the frontal bones, they communicated with the cranial cavity and contained herniated meninges of the brain.

The mandible was curved in its long axis, giving it a much shorter appearance than normal, and it extended a little in front of the pre-maxilla. Owing to the peculiar disposition of the nasal and pre-maxillary bones, the skull when viewed from the side was semi-circular in shape.

The brain as a whole was well developed. Only in the anterior part of the cerebrum was there anything remarkable. No olfactory bulbs

could be demonstrated with certainty, as they appeared to have been obliterated in consequence of the herniation of the meninges previously mentioned.

The meningeal hernia was in the form of two pear-shaped diverticula, protruding through the deficiencies of the frontal bones, and

connected by their narrow ends with the normally disposed membranes within the cranium.

It is well nigh impossible to assign any cause to all the abnormalities. Some of them, such as the hare lip, for example, are clearly the result of defective development; but other factors must have been at work to produce the hernia of the cranial meninges and the numerous accessory ossicles.

RHEUMATISM IN PEDIGREE BULLS DUE TO WASHING.

"BY DEEMSTER."

THE following may be of interest to your readers:—

In February last I was called to see a Shorthorn yearling bull, one of six very well bred young bulls. I was told he was slightly off his feed, and stiff on one fore leg, most noticable when he got up after lying. On examination I found the animal stiff on the off fore leg;

temperature 104-5° F. He did not yield to pressure on any part of the limb. I prescribed for him and said I would see him in a day or two. On my second visit I found him very stiff on both fore legs, standing over on fetlock joints, and swelling of both joints. He was off his feed. Temperature 103-5° F. Another bull was exhibiting the same symptoms as No. 1 did on my first visit. Five of the six bulls were attacked within three weeks, they all showed the same symptoms; temperature as high as 105 6° F. Swelling of joints, hocks, and fetlocks, and shifting from one joint to another. Animals off their food and very stiff.

Treatment.—Hot fomentation of joints, which were then thoroughly dried and bandaged; sheeted day and night; internally alteratives—sod. salicyl. and pot. nit. The animals were removed to warm, well-drained, and well-ventilated loose boxes. When the acute stage had passed I gave pot. iod. internally, and applied stimulating liniment to the joints. They were exercised daily and have all done well.

These animals had been reared on the dams. At the beginning of winter they were put into badly constructed draughty loose boxes and washed twice weekly with cold water and soap. When the herd told me about washing the animals I ordered it to be stopped at once.

The sixth bull escaped. As he was subject to slight attacks of indigestion he was not washed. Five yearling heifers of the same herd, reared in exactly the same way, fed on the same food, but housed in good, healthy houses, and never washed all over like the five bulls, have also escaped and are very healthy.

A CASE OF BLAINE IN A COW.

BY R. F. STIRLING, STUDENT ROYAL VETERINARY COLLEGE, DUBLIN.

WHILST acting as assistant to Mr. Dawson, M.R.C.V.S., of Cavan, we were requested to attend a cow which was said to have "choked herself."

Arriving at the farm, about a mile distant, we were told that about one and a half hours previously the yard man had given the cows their morning feed. On returning from his breakfast in about half an hour he found this particular cow in great distress and unable to eat or drink. The subject was a dairy cow, aged 5.

Symptoms.—The cow was standing with head extended, so that the angle between the head and neck was almost obliterated. The respirations were markedly accelerated and noisy, with heaving of the abdominal walls. Temperature slightly elevated; pulse frequent and full. Signs of great distress were evident in the posture of the animal and the expression of the face. There were patchy perspirations. The eyelids were markedly œdematous, and there was epiphora. On examination of mouth the palate presented the appearance of that of a horse with so-called lampas, being thrown into œdematous ridges, whilst the buccal mucous membrane was swollen. There was an œdematous swelling of the intermaxillary space. The vulva was swollen, œdematous, and hyperæmic, presenting a similar appearance to that shown just previous to parturition. The mammary gland was swollen and leathery in its hardness.

Treatment.—Scarification of the hard palate was first resorted to; then when the congestion had been relieved in the mouth the following draught was administered: ℞. Ammon. carb., natr. bicarb., kali nitratis āā ʒiv., brandy ʒv., aquæ ad. Oi., misce et fiat haustus. This, with the exception of the brandy, was repeated in two hours' time. In three or four hours all the swellings had disappeared and the animal was at perfect ease.

These symptoms are seen commonly in animals which have been driven to a fair or market immediately after receiving a large meal, and the treatment usually adopted by the attendants is to cut the palate and give kali nitratis ʒi.

It is said to be by no means uncommon for animals which are well advanced in pregnancy to abort coincident with an attack of blaines. From the history given in most cases it appears to be due, primarily at least, to an acute attack of indigestion. My reason for recording the case is, that I have often heard scepticism expressed as the occurrence of any such condition as "blaine" or "blaines."

THE IRRITATIVE RESULTS OF BARLEY GRASS.

BY G. H. LIVESEY, M.R.C.V.S., HOVE, SUSSEX.

In the Journal of October 6, 1906, Mr. W. F. Garside draws attention to the occurrence of the awns of wild barley grass in interdigital cysts in dogs. Probably many practitioners seldom meet with these cases, but here in Sussex, where wild barley grass is very common, such cases are numerous, though the awns by no means confine themselves to the feet. Perhaps some of the readers of the Journal will be interested in a short list of situations in which I have found these awns during the last three or four years in the dog or cat:—

In the feet	... ...	11 times
,, eye	... ...	twice
,, ear	... ...	4 times
,, fore-arm	... ...	once
,, umbilicus	... ...	once
,, prepuce	... ...	once
,, anus	... ...	once
,, anal gland	... ...	twice
And in the upper lip of the horse		... twice

Those found *in the feet* had caused cystic swellings, abscesses or sinuses, and were only found on opening up with the knife or by the use of long, fine forceps.

In the Eye.—Both the cases were in cats, the awn in each case being found behind the membrana nictitans.

In the Ear.—In all the cases the patients were long-haired dogs, such as spaniels, except in one instance, in which the animal was a beagle. In each the awn was not visible, and was only found by inserting blunt curved forceps into the meatus, when the awn was removed either piecemeal or entire. In this situation great pain was caused, giving rise to vertigo and tremor in one case, and to a troublesome abscess.

In the Fore-arm.—In this case (a Sussex spaniel) I believe the awn

had entered at the back of the wrist and had burrowed its way towards the back of the elbow, leaving a troublesome sinus. The awn was located by the pain produced by pressing immediately over a spot a little below the elbow. An incision was made and the awn removed, after which the sinus quickly healed.

In the Umbilicus.—This case was seen early, when the awn had only passed half its length through the skin. This patient was a rough-coated dog—mongrel—in which the umbilicus was a little depressed.

In the Prepuce.—A Yorkshire terrier with a discharge from the prepuce. Attention had been called owing to the dog persistently licking the part. The awn was easily removed from the base of the sheath, where it was lying free, and where it could only have quite recently intruded itself.

In the Anus.—In this case the dog (a collie) was almost frenzied and had been dragging itself along the ground, and showed all the symptoms of some acute irritation of the anus. Part of a head of barley grass, consisting of three or four awns, was found just inside the anus and removed by the finger.

In the Anal Gland.—Two awns found in the one gland. When first seen there had been an abscess of the gland which had burst externally, leaving a fistula which would not heal. This was opened and explored, the result being that two separate awns were removed. The wound and sac were well cleaned and cauterised with zinc chloride, and healed completely in about fifteen days, leaving a rather deep scar.

In the Upper Lip of the Horse.—In this case, seen early this year, my partner, Mr. G. W. Bloxsome, when treating a small fistulous wound of the upper lip, removed an awn of barley grass, but the wound did not heal well. Ten days after, making a deeper exploration, a second awn was removed, after which the wound healed uneventfully.

TUMOUR OF THE CEREBELLUM IN A DOG, ASSOCIATED WITH FORCED MOVEMENTS.*

BY FREDERICK E. BATTEN, M.D. (FROM THE NEUROLOGICAL RESEARCH DEPARTMENT, NATIONAL HOSPITAL, QUEEN'S SQUARE.)

(1) Introduction.

It is well known from experimental investigation that injury to or removal of portions of the cerebellum in lower animals gives rise to a definite train of symptoms, of which possibly the attitude assumed, the rotation of the animal on its long axis and the circus movements are the most striking, although not the most characteristic and constant features, of such a lesion.

Apart from experimental lesions, some observations have been made in animals, in which the symptoms during life pointed to a cerebellar lesion, and on investigation a cerebellar lesion was found; such are the cases reported by Herringham and Andrewes, Risien Russell, and Thomas Lewis. Rotation on the long axis was not present in any of

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these cases, and circus movements were present only in the case reported by Thomas Lewis.

In all these reports atrophy of *both* lateral lobes of the cerebellum was present.

In the first place it will be well to describe the symptoms which the dog presented and the pathological appearances, and afterwards to compare the symptoms with those which have been observed after experimental lesion.

(2) History of the Case.

The following is the history of the dog, as obtained from Mr. Prime, the veterinary surgeon under whose care the dog came. Mr. Prime recognised the unusual nature of the symptoms, and sent the dog to Mr. Hobday for a further opinion. The dog, a black mongrel terrier, aged 18 months to 2 years, was bought in London three weeks before for two shillings, and was being trained as a jumping dog—the trainer had not noticed the animal to have had any bad falls on the head. Five days before sending the dog to Mr. Hobday, Mr. Prime had noticed slight loss of control of the hind quarters, gradually increasing till, three days after the first symptoms had appeared, the dog could not stand. He carried his head to one side, and rolled over when excited.

The dog was seen with Mr. Hobday by Dr. Gordon Holmes and myself, and the following account of the symptoms is based on notes and drawings made by Dr. Holmes and myself at the time of, and immediately after, seeing the animal:—

In one or two points the accounts differ, more especially in regard to the attitude. It is of interest to note that although we are describing the same phenomenon, and we are in perfect agreement as to the direction of the rotation, Dr. Holmes says, "the animal at once rolled over to the left"; whilst my description is "the dog at once rotates on its long axis from left to right"; both of us at once qualify the statement by a description of the movement, which leaves no doubt as to the agreement, but the fact demonstrates how misleading the terms "rotation to the right or left" may be, and that other nomenclature is needed to describe these movements. The dog was unable to stand. If held up by the scruff of the neck and by the skin over the rump, he squirmed about so that it was hardly possible to hold him. If stood on his hind legs, with the fore limbs and head held between the knees, he could support his weight.

Attitude.—When left alone the dog lay on the ground on his right side, and with the right side of the face against the ground, the left side being turned up. The whole body was curved, the concavity being ventralwards, and on the left side of the body. (Plate I.)

The position of the head was very marked and constant. The head was flexed so that the right ear approximated to the right shoulder. The head was rotated on its long axis so that the left side of the face was turned up. The head was kept in close approximation to the ground. There was no great rigidity of the neck muscles. (Plate I., figs. 1 and 2.)

Limbs.—The right fore-limbs were abducted and placed on the ground, at an angle of about 45° to the long axis of the head. The left fore-limb was flexed, and the fore part lay parallel with the long axis of the dog. (See plate I., fig. 1.) Dr. Holmes and myself are not in absolute

agreement on this point, and it may be well to give his description of the attitude in his own words: "The right fore-limb lay partly under, partly behind the body—the humerus seemed to separate the shoulders from the floor, while the arm and paw lay flat on the ground." (See plate I., fig. 2.) The hind legs were generally flexed, but at times became extended, the right being generally more extended than the left. The legs were not spastic, for they could be passively flexed with the greatest ease; on the other hand, when handled, they were generally found to be rigid, this rigidity seeming to be due to volitional

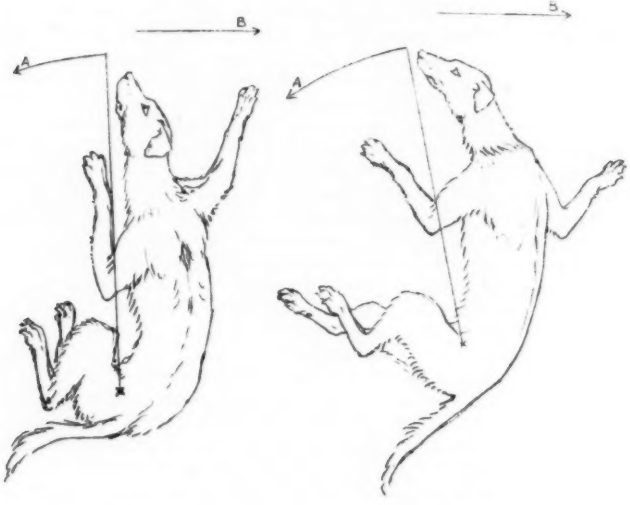

FIG. 1. FIG. 2.

PLATE I.—FIGS. 1 AND 2.

These figures indicate the position assumed by the dog as seen from above, the animal lying on the floor on its right side.
Fig. 1 represents the position as reconstructed from a rough sketch of mine made at the time. (F.E.B.)
Fig. 2 represents the position as reconstructed from a sketch made by Dr. Holmes.
The letter *A* indicates the circumference of the circle, and the direction of the "circus movements" which the dog performed.
The letter *B* indicates the direction in which the dog rotated on its long axis along the stable floor.
For the reconstruction of the drawings from the rough sketches I am indebted to my brother (Mr. J. D. Batten).

effort in the attempt to avoid forced movement. Dr. Holmes considered the right hind limb was distinctly stiffer than the left.

(*a*) *Movements.*—Forced movement of rotation on long axis.—If the dog was undisturbed he would lie still in the position above described for some time; but under emotional stimulus, or if the right fore limb was brought in parallel to the long axis of the body, so that it no longer formed a support, the dog at once rotated on its long axis from left to right, *i.e.*, regarded as a corkscrew or common screw,* he

* The head of the animal corresponded to the head of the screw, or the handle of the corkscrew.

rotated as an outcoming screw, or, in other words, the right shoulder moved forwards across the trunk until the same relative position was reached. At times the rotatory movement would occur two or three times, so that the dog rolled over and over along the stable floor on his long axis, and only came to rest when the right fore limb was sufficiently far out to prevent further rotation. The rotation was so rapidly performed that it was impossible to describe any movement of the body during its execution.

Dr. Holmes, in his description, says the animal at once rolled over to his left (*i.e.*, when lying on its right side the limbs arose and passed across the trunk and then the trunk over the limbs).

We are in perfect agreement as to which way the dog did roll, and the difference in description depends upon the fact that one is accustomed to regard an animal in the prone position, a man in the erect or dorsal position.

I myself am of opinion that the method of describing rotation in the terms "the right (or left, as the case may be) shoulder moves forward" is that which is least liable to error.

The ingoing and outcoming screw is also a perfectly clear method of describing rotation to all who are familiar with the use of an ordinary screw and do not wish to quibble as to a male or female, and a right- or left-handed screw, the head of the animal representing the head of the screw.

(*b*) *Circus Movements.*—Apart from the rotatory movement on its long axis, the dog tended to move round in a circle on the floor anti-clockwise, *i.e.*, if a watch were placed on the floor with the face upward, the movements would be in a direction opposite to that of the hands (plate I., figs. 1 and 2); the direction of the circus movement is indicated by the circumference of a circle with an arrow mark. During these movements the dog, lying on his right side, kept the head on the ground and "paddled himself round with short movements of the fore limbs in a circle, whose centre corresponded approximately to the hip joints, and with a radius extending from here to the tip of the nose." To what extent the movement was volitional or to what extent it was a forced movement was impossible to tell.

The dog appeared in good health, had a good coat, and was friendly and responsive. There was no paralysis of the face, no nystagmus, no ocular paralysis. The knee-jerks were present and equal.

The dog was killed with hydrocyanic acid and a *post mortem* immediately made.

(3) Pathological Appearances.

On superficial examination the cerebral cortex, the surface of the cerebellum and spinal cord, appeared quite normal. On examination of the medulla and under-surface of cerebellum, a tumour was seen to occupy the medulla on the right side, and involved the region of the olive and inferior peduncles of the cerebellum, on that side. The tumour had obliterated the external configuration of the structure in this neighbourhood, but did not affect the pyramid. On section, the tumour was seen to involve the central and peripheral portion of the right lateral lobe of the cerebellum, together with the flocculus, restiform body, and the eighth nerve in its course and exit. The whole of the right side of the medulla was much larger than the left, and the

tumour involved the region of the inferior cerebellar peduncles, the upper and outer portion of the olive, and the ascending root of the fifth. The total length of the tumour was 1·4 cm. On section, the tumour was firm and more vascular than the surrounding brain tissue.

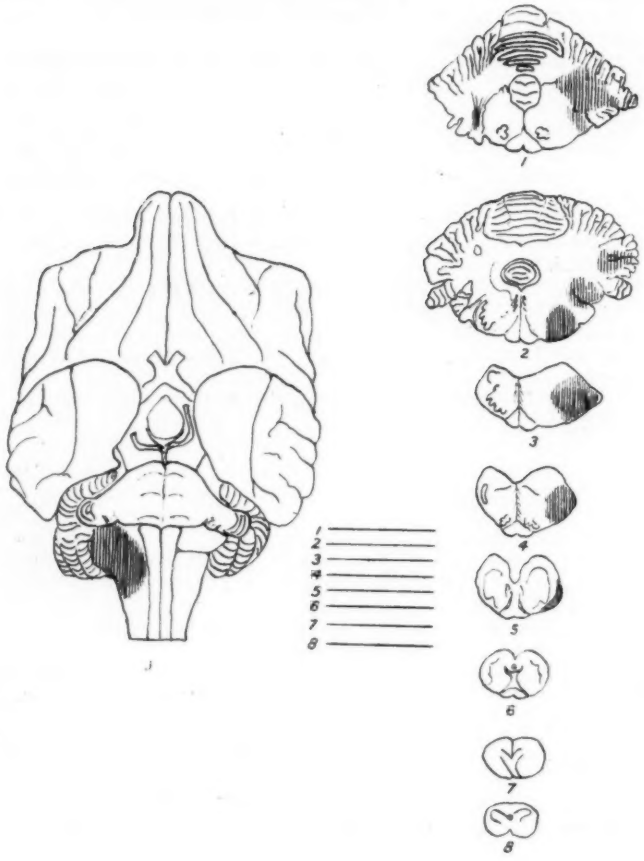

PLATE II.—FIGS. 1 TO 9.

Base of the brain of the dog. The shaded area indicates the position of the tumour, involving the medulla and under-surface of the cerebellum on the right side. The horizontal lines numbered 1—8 indicate the line of section, and the shaded areas in figures 1 to 8 show the position of the tumour as seen with the naked eye.

Plate II. shows the position of the tumour as seen from the base of the brain. Figs. Nos. 1—8 show the position of the tumour as seen on section by naked-eye examination.

(4) Microscopical Examination.

The pons, cerebellum, and medulla were cut in series, and stained by the Weigert-Pal and van Gieson method.

The Extent and Position of the Growth.—A section of the cord at the level of the decussation of the pyramids showed no change.

In a section at the level of the posterior column nuclei, it was obvious that the right side of the cord was larger than the left, but on microscopical examination no obvious growth could be seen, nor was the cause of this enlargement of the cord on the right side apparent.

In a section at the lowest part of the fourth ventricle the growth appeared on the periphery of the cord growing into the substance of the cord from the vessels of the pia mater. In a section at the level of the inferior olive the growth involved a considerable portion of the right half of the medulla. It did not, at this level, invade the olive itself, but involved the region of the direct cerebellar tract and the substantia reticularis (plate III., fig. 6).

About this level the growth became much more extensive, and involved the restiform body, the ascending root of the fifth and the outer part of the olive, but at no point was the pyramid involved (plate III., figs. 5 and 4). The eighth nerve on the right side was involved in the growth, and the peripheral portion of the seventh nerve in its course through the medulla was also involved, the central portion remaining intact. The sixth nerve was not involved in the growth (plate III., fig. 3).

The region of Deiters' nucleus was not actually involved in the growth, but only a few multipolar cells of this nucleus could be seen, and these were more numerous on the right side than the left.

The growth extended up into the cerebellum, involving the cerebellar cortex in the region of the flocculus and the region of the dentate nucleus (figs. 2 and 1). The growth involved the fifth nerve on the right side, but did not destroy it, for it stains relatively well by the Weigert-Pal method.

In a similar manner the superior cerebellar peduncles were affected to a slight extent on the right side.

On the left side there was at this level a small mass of growth completely separated from the main growth. This growth involved the folia of the cerebellum, but did not extend into the middle of the cerebellum or involve the fifth nerve.

With regard to the cranial nuclei, it is difficult to state that there was any definite change. The cells in the right hypoglossal nuclei were not so numerous as those in the left. The nuclei of the vagus were well stained. The sixth nucleus appeared normal, as did also many cells in the seventh, in spite of the fact that the intramedullary portion of the nerve passed through the growth.

Many fairly normal nerve cells could be seen lying within the growth.

Nature of the Growth.—Sections were stained by van Gieson's method. Under the low power the growth is seen to be composed of small round cells, darkly stained, and larger oval cells lightly stained with a nucleus; these cells are fairly uniform in size.

The cells are massed for the most part round vessels, and hence the vessels are clearly picked out in their course through the growth In portions of growth in which the vessels were cut in transverse section

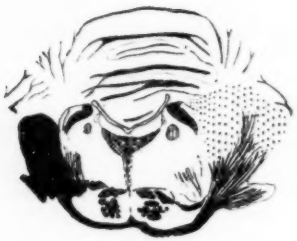

FIG. 1.

FIG. 4.

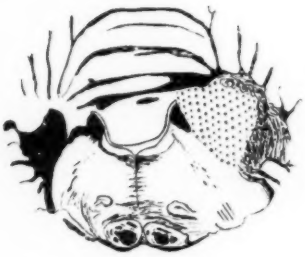

FIG. 2.

FIG. 5

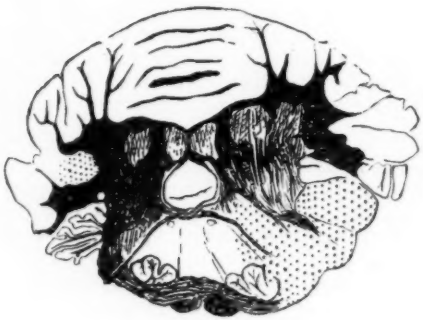

FIG. 3.

FIG. 6.

PLATE III.—FIGS. 1 TO 6.

FIG. 1.—Section through the pons and cerebellum. The situation of the tumour is indicated in all the sections by the dotted areas.....

The tumour at this level occupies the central portion of the right lateral lobe of the cerebellum. The middle peduncle of the cerebellum, and the superior peduncle, to a limited extent and ventrally, involves the greater part of the fifth root, but does not completely destroy it.

FIG. 2.—Similar to the above, but below the fifth root.

FIG. 3.—Section through the medulla at its junction with the pons. The great mass of the growth is situated on the right side of the medulla and lower part of the cerebellum. It involves, at this region, the inferior peduncle of the cerebellum, the flocculus, the eighth nerve, and the seventh, in part of its course. The outer part of the right olive is also involved. A small mass of growth is also seen in the left lobe of the cerebellum, growing in from the pia mater, and involving the cortex of the cerebellum, but not extending into the middle of the lobe.

FIGS. 4, 5, and 6.—Sections through the medulla indicating the extent of the growth at various levels. The growth involves the direct cerebellar tract and restiform body, the ascending root of the fifth nerve and the outer part of the olive, but does not involve the pyramidial fibres.

a vessel could be seen in the centre surrounded with layers of cells. No giant cells could be seen.

Towards the periphery of the growth the extension was along the walls of the blood vessels.

The growth appeared to have started on the outer surface of the cord, probably in the walls of the vessels of the pia mater, and gradually to have invaded the medulla along the course of the blood vessels. The growth would probably be classified as a sarcoma growing from the outer sheaths of the blood vessels.

Dr. C. G. Seligman states that though there is a good deal of perivascular infiltration in the edge of the growth, yet in the main growth the glial proliferation is quite sufficient to constitute a glioma.

As another observer to whom I have submitted the specimen is not in agreement with the above statement, it may be well to state his views:—

Dr. Lazarus Barlow has kindly furnished the following report: "From the peculiar distribution around the blood vessels, from the character of the cells and particularly from the fact that I find a fair number of polymorphonuclear leucocytes intermixed with the chiefly lymphocytic elements forming the masses, I have come to the conclusion that the condition is inflammatory and not neoplastic. From the neoplastic point of view, the mass could only be angiosarcomatous, and I am convinced that it is not of that nature."

(5) Symptoms observed in this Dog Compared with those seen after Experimental Lesions.

In order to compare the symptoms seen in this dog with those observed after experimental ablation, the following table had been arranged in terms of ablation of the right lateral lobe of the cerebellum.

From a comparison of the above results it will be seen that the direction of rotation in this dog corresponded to the experimental results of Luciani, Ferrier and Turner, and Thomas, but were in the opposite direction to those described by Russell.

With regard to the attitude assumed the position in this dog corresponded to the experimental results of the same observers and differed from Russell in the rotation of the neck.

The direction of the concavity of the spine corresponded to that observed by Russell and Thomas, and was the reverse to that seen by Luciani.

The other symptoms—the ataxia, weakness, rigidity of muscles—were general in the dog and not localised as in most of the experimental results.

No ocular paralysis or nystagmus was observed in this dog.

Seeing, however, that the tumour involved the eighth nerve on the right side in this dog, it is interesting to compare the result with those obtained by Russell on section of the nerve on the right side.

In this animal, after section of the eighth nerve, the dog rotated to the right (outcoming corkscrew), the reverse direction to that obtained by Russell on ablation of the right lobe. The dog fell to the right side, had concavity of the spine to the right, and performed circus movements to the right. There was no definite ataxia, weakness, loss of tone, or anæsthesia, nor was any definite position of the head assumed.

Section and irritation of the nerve gave the same result.

TABLE I.—ABLATION OF THE RIGHT LATERAL LOBE OF THE CEREBELLUM.

	Luciani	Ferrier and Turner	Russell	Thomas	Dog tumour of right side
Rotation	To right. Right shoulder moves forward. Outcoming corkscrew	To right. Right shoulder moves forward. Outcoming corkscrew	To left. Ingoing corkscrew	To right, *i.e.*, right shoulder moves forward. Outcoming corkscrew	To right, *i.e.*, right shoulder moves forward. Outcoming corkscrew
Reeling	To right	... ...	To left	... ...	Circus movements to left, *i.e.*, anti-clockwise
Attitude	... ...	Head inclined to right side and rotated to the left	Right side of face turned up. Right ear approximate to right shoulder	Head to right side shoulder. Left side of face turned up	Right ear approximated to right shoulder. Left side of face turned up
Concavity of Spine	To left	None	To right	To the right, lies on right side	To the right, lies on right side
Ataxia	On right side	General	Right side	Right side	General
Weakness	On right side	None	Right side and posterior limb of opposite side	Right side	No true weakness, inability to stand due to forced movements
Tone	Loss of tone on right side	No loss	Rigidity of right side ...	General rigidity, overaction of right side	General slight rigidity
Anæsthesia ...	None	None	Same as motor paresis ...		
Ocular paralysis ...	Skew deviation: Right, in and downwards. Left, up and out	Skew deviation: Right, in and down. Left, up and out	Left eyeball downwards and outwards	Deviation to the left ...	None
Nystagmus ...	... ...	... ...	To the right	... ...	None

Dr. L. J. Muskens gives a good account of circus movements and rotation as seen both in the lower and higher vertebrates, and his observations correspond with the movements observed in this dog. The ocular phenomena to which he pays special attention were not present in this dog.

(6) The Description of Position as Applicable to Man and Animals.

I have already made some allusion to this subject and the difficulty which arises in describing rotation movement to right or left.

Rotation in the long axis should be described in terms of the right or left shoulder moving forward, or in terms of an ingoing or outcoming screw.

Circus movements should be described in terms of the hands of a watch placed on the floor so that the observer can see the hands, clockwise or anti-clockwise.

(7) Observations on Animals Presenting Cerebellar Symptoms.

A few observations on pathological lesion of the cerebellum have been made in animals. The family of half-breed Persian cats with cerebellar symptoms investigated by Dr. Herringham and Dr. Andrewes are of great interest. These animals showed atrophy of the whole of the cerebellum.

Another interesting observation is that of Dr. Risien Russell on a puppy, one of a litter, all of whom were similarly affected. In this case the cerebellum was reduced to almost three-fourths its normal size.

A third observation is that of Mr. Thomas Lewis in a dog who had exhibited "circus movements" for at least four years, and in which there was a general diminution in the size of the cerebellum, with shrinking of the dorsal surface of the lateral lobes.

One other case is of interest in the connection. A black pug, one year old, had never been very strong and had had distemper three months previously. Discharge from the left ear had subsequently been noticed; one month previously the pug had become unsteady on its legs and had been much worse for the last week—he had vomited and seems to have lost his vision.

When placed on the floor the dog started off to walk, and walked round and round in a circle to the right (clockwise). The dog on this occasion could not be got to go in the opposite direction. The dog would wander round and round the room, always to the right, and was only stopped by coming in contact with an object which prevented his turning to the right. He would then stand in a dazed condition, and as soon as the obstruction was removed, on he would go on his walk. Both hind legs were very weak, and it needed but a touch to upset his balance.

A few days later he walked round in a circle to the left (anti-clockwise). This movement was not so marked as had been the circus movement to the right. The dog was killed, and on macroscopic examination of the brain and spinal cord nothing abnormal was seen. On microscopical examination changes were present in the cerebrum, the cerebellum and spinal cord, similar to those found in diphtheritic paralysis, *i.e.*, degeneration of the myelin sheath, and some alteration in the nerve cells when stained by the Marchi and Nissl methods.

Fig. 2.—Left hock, external aspect.

Fig. 1.—Left hock, internal aspect.

(These figures illustrate article "Simmons *v.* Sheather," on p. 269.)

(8) Conclusion.

Forced movements of the character seen in this dog and after experimental lesion are but rarely seen in man.

The symptoms presented by this dog were such as to lead one to believe that the lesion was situated on the right lateral lobe of the cerebellum, and in this situation and in the medulla the larger lesion was found; a small tumour was, however, present in the left lateral lobe.

My best thanks are due to my friend, Dr. Gordon Holmes, not only for superintending the preparation of the section, but also for his help both in the clinical and pathological investigation of this case.

References.

(1) Ferrier & Turner. *Phil. Trans. Royal Soc.*, 1894, vol. clxxxv.
(2) Herringham & Andrewes. *St. Bart.'s Hosp. Reports*, 1888, vol. xxiv., p. 241.
(3) Thomas Lewis. *Brain*, 1904, p. 84.
(4) Luciani. *Il Cervelletto*, 1892.
(5) Muskens. *Journal of Physiology*, 1904, vol. xxxi., p. 204.
(6) Russell. *Phil. Trans. Royal Soc.*, 1894, vol. clxxxv.
(7) Russell. *Brain*, 1895, vol. xviii., p. 523.

Fig. 1.—Left hock, internal aspect.
Fig. 2.—Left hock, external aspect.
(These figures illustrate article "Simmons *v.* Sheather," on p. 269.)

THE SEQUEL TO AN IMPORTANT LAW SUIT (SIMMONS *v.* SHEATHER).

In the Veterinary Journal for December, 1905, there was published somewhat *in extenso* the account of an action at law which was of the utmost importance to members of the veterinary profession.

Briefly the details were as follows: The plaintiff, Mr. Simmons, a member of the Stock Exchange, consulted Mr. Charles Sheather, F.R.C.V.S., a well-known London practitioner, with reference to the purchase of a black cob mare, 14·3 hands high, for riding purposes, and at his request Mr. Sheather examined the animal at Hounslow and, with the exception of an enlargement of the tendons of the off-fore leg, passed the mare "sound." The purchase price was £60, and the mare passed into Mr. Simmons' stable in October, 1904. Shortly afterwards Mr. Simmons informed Mr. Sheather that the mare had spavined hocks, and that as he was informed they must have been spavined at the time of purchase, he determined to sell the mare for what she would fetch and sue Mr. Sheather for the difference. The animal was sold at Tattersall's on January 16th for £18 18s.

Mr. Sheather, who had the courage to stand by his opinion, purchased the mare, and kept her in continual work and under close observation until the trial, which took place in the High Courts of

Fig. 4.—Right hock, external aspect.

Fig. 3.—Right hock, internal aspect.

(These figures illustrate article "Simmons *v.* Sheather" on p. 369.)

Justice on November 15th and 16th, 1905, before the Lord Chief Justice (Lord Alverstone) and a special jury.

Expert evidence was given on both sides, but eventually the jury decided in Mr. Sheather's favour.

The mare has been in regular work until the early part of May of this year, without lameness or any defective hock action, and has now been slaughtered.

The condition of the hocks and the absolute freedom from any evidence of spavin is clearly depicted in the four photographs here shown.*

Reviews.

THE SENSE OF TOUCH IN MAMMALS AND BIRDS. By Walter Kidd, M.D., F.Z.S. Demy 8vo., 176 pp., with 164 illustrations. Published by A. and C. Black, London. 5s. net.

THE title of this work does not give an accurate idea of the nature of the contents. The volume is devoted chiefly to an examination of the disposition of the epidermis in the skin of the hands (or fore feet) and feet (or hind feet) of a large number of animals, including the primates and man. The skin at other portions of the body where in some animals the sense of touch seems to attain a remarkably fine development is not described. The epidermis in the regions examined is shown to be modified in various ways in different animals, *e.g.*, it is smooth in the earth wolf, corrugated in various rodents, scaly in some marsupials, modulated in the Canadian tree porcupine, the pads are covered with hair in the rabbit, the epidermis is drawn out into rods in the carnivora, and forms papillary ridges in man and the primates. In some forms the types of epidermis are mixed, *e.g.*, in the dog and cat the palmar and plantar surfaces of the paws are covered with hair, from which the digital, palmar and plantar pads and nails or claws project. A description of these variations is given in eighty-six mammals. Of the domesticated mammals the dog and cat only are taken into account. The description and illustrations of the differences of the papillary ridges in the primates and man are excellent, and must have entailed a great amount of labour. In dealing with the minute anatomy of the epidermis the author points out the relationship of the dermis to the epidermis in these variations, the arrangement of the former into papillæ or ridges corresponding with that of the latter. The histological illustrations are fair. The bearing that these variations have on the sense of touch is not very clearly made out. Very little attention, and that only in the case of the human subject, is paid to the character of the nerve endings in the dermis, so far as these may and must be connected with this sense. It is not shown how the disposition of the epidermis affects the transmission of impressions to these nerve endings. Probably the variations described are more the result of adaptation, and depend upon the

* For these illustrations we are indebted to the courtesy of the Publishers of the *Veterinary Record.*

FIG. 4.—Right hock, external aspect.

FIG. 3.—Right hock, internal aspect.
(These figures illustrate article "Simmons *v.* Sheather" on p. 369.)

work to which the extremities are put, *e.g.*, for the purposes of wear or to prevent slipping during prehension or travelling.

The printing and illustrations are excellent, and the binding good.

CHARTS OF THE DISEASES OF THE HORSE, WITH EXPLANATORY NOTES AND PRESCRIPTIONS. By Charles Gresswell, M.R.C.V.S. Revised by G. Gresswell, M.A., L.R.C.P. and S.E., &c. Published by Everett & Co., London. Demy 4to., pp. 62. Price 7s. 6d.

THIS work was written by the late Mr. C. Gresswell, who, however, did not live to see it published. Mr. G. Gresswell has done what revision was necessary, and it is now published for the first time.

It would have been very difficult to know where to place it, had the author not told us in the introduction that he intended it for "the ordinary horseman without any special scientific training."

That being the case, we are of opinion that to a great extent it will quite accomplish the aim of the writer, while on the other hand, it is very often too advanced to be understood by the layman. Had it gone a little further into technical details with regard to the diseases it treats of, it would have been of great value to students as a kind of "grind" book.

Most of the information in the book is very good indeed, the chapter on nursing being excellent.

In the first chapter there are some useful hints, including "don'ts," which are very much to the point, and which may be reproduced with advantage. For example: "Don't allow the blacksmith to cut away the horny bars of the foot, for they prevent contraction of that structure." "Don't believe any man who claims he has a 'certain cure' for spavin, ringbone, roaring, or broken-wind." "Don't allow your horses' mouths to be burnt for 'Lampas,' nor their teeth constantly filed." "Don't work a lame horse, or one which has any symptoms of ill-health," &c.

Chapter vii. contains a number of prescriptions which are nearly all excellent combinations, and would be very useful indeed for reference by practitioners and students. From a student's point of view, however, it is a pity they are not written in technical language. There appears to be a mistake, however, in No. 27, which is called "purgative medicine." It contains calomel, aloin, and powdered opium, of each 2 drams, and common flour, 10 drams, to be made into four balls, one to be given every four hours. This preparation may be of service, but we have our doubts as to the inclusion of the opium, which is a well-known intestinal astringent.

A very important and serious omission is made in reference to the use of mallein, which we are told "contains the components of the bacilli of glanders." No mention is made of the local reaction in the case of glandered horses, and this is all important, since in our opinion no horse should be pronounced "glandered" without a typical local reaction, no matter what the temperature reaction may be. In another place we are told that tapeworms of horses are sometimes 20 to 30 feet long. We have never heard of such long parasites in horses.

A quite novel arrangement has been adopted with regard to the symptoms and treatment of the various diseases. They are all tabu-

lated, general symptoms, &c., for a whole class, such as diseases of the brain and nervous system, being given first, and followed by the special symptoms and treatment of particular affections. This arrangement would have worked out better for all, except perhaps the layman, if the medicines recommended for each ailment had been specified under the heading of treatment instead of giving the numbers of prescriptions, thus requiring constant reference to the chapter on prescriptions.

The publishers' part of the work is excellent.

THE ELEMENTS OF THE PRACTICE OF COMPARATIVE MEDICINE. By F. T. Barton, M.R.C.V.S., and G. Gresswell, M.A., L.R.C.P., L.R.C.S., &c. Published by Everett & Co., London. Demy 8vo., pp. 240, no illustrations. 5s.

WE regret that we have found very little to recommend in this book, and we may say at once that the mistakes of various kinds are more numerous than we have ever previously seen in any book. In the first place, a blunder has been made in the numbers of the pages indicated in the table of contents and in the index, for *in no single instance* did we find the correct page given. For example, the table of contents reads "General Description of Tuberculosis, p. 98," and on turning to page 98 we find it dealing with anthrax.

It is very regrettable that at this date we should be told by the authors that actinomycosis occurs "in equines as a disease of the spermatic cord under the title of *Discomycosis equi*, or *botryomycosis*, more popularly as *scirrhus cord*." It is *perhaps* possible for actinomycosis to infect equines, but in any case it is undeniably distinct from discomycosis. We are also told that sheep ticks (*Ixodes reticulatus*) are known to shepherds as "fags" and "keds." Now, the common so-called "keds" are not ticks at all, but are apterous insects, namely, *Melophagus ovinus*. In dealing with anthrax the authors say, "This shows the necessity for preventing sheep, dogs, &c., from devouring a braxy, &c., carcase" (p. 93). Very lucid, no doubt, but surely sheep are not usually carnivorqus! As a literary effort the book leaves much to be desired. Take the following as an example: with reference to the use of mallein we read, "A well-marked swelling is not necessarily accompanied by anything beyond a trifling rise of temperature, though the local lesion is usually sufficiently of glanders."

There is just one redeeming feature, and that is undoubtedly an interesting feature. The book contains records of some cases in man of diseases transmissible from animal sources, such as glanders, anthrax, rabies, &c. These are taken from various journals, such as the *Lancet* and *Veterinary Record*, and are certainly interesting and instructive.

MANUALE PER IL VETERINARIO (Veterinary Manual). Roux and Lari, one vol., 356 pages, 16 illustrations. Published by Messrs. Hoepli, Milan. Price, f. 3·50.

THE preface gives the plan of the book. "This little book is designed for the use of practitioners who have not time to read text-books and scientific journals, but it is also of use to candidates for Government employment and students. It is divided into six parts: (1) Is a brief review of the principal drugs used in veterinary practice,

incompatibles, toxic properties, &c. (2) A summary of notes on infectious diseases, diagnosis and prophylaxis. (3) Written on the same plan, treats of certain diseases of the domestic animals. (4) Is a guide to testing the urine. (5) Deals with veterinary jurisprudence, and (6) with sanitary police."

The book is written in Italian, and is much the same as Mollereau, Porcher and Nicolas' Vade Mecum, it is carefully noted up to date, and is a reliable guide to the busy practitioner.

The chapter on Nosology in particular is worthy of notice, and some of the author's descriptions are models of clearness.

The book is well printed and got up, and does both the authors and publishers credit.

Unfortunately it will be barred to the majority of English veterinary surgeons, not many of whom are conversant with Italian.

ROYAL COLLEGE OF VETERINARY SURGEONS.

Fellowship Degree.

A meeting of the Board of Examiners for this Degree was held on the 18th inst. at 10, Red Lion Square. Eight candidates entered for the examination, and the under-mentioned gentlemen passed and obtained the Diploma: Mr. J. T. Share-Jones, Captain J. J. Griffith, Mr. R. Paine, Mr. T. A. Ford, Mr. E. M. Perry, Mr. W. H. Chase, Captain W. Martin Millar, Mr. F. W. Cox.

The examiners were Messrs. J. Malcolm, W. Hunting, Professor J. MacQueen, and W. J. Mulvey, Esq., in the chair.

Fred Bullock, *Secretary.*

FOURTEENTH INTERNATIONAL CONGRESS OF HYGIENE AND DEMOGRAPHY, BERLIN, SEPTEMBER 23 to 29, 1907.

The Committee of Organisation and the Local Committee have resolved to give the members of the Congress an opportunity of making themselves acquainted with the numerous hygienic institutes of Berlin and its environs. The scientific meetings will terminate not later than 2 o'clock, in order that the afternoons may be free for sight-seeing. By arrangement with the Presidents of the different sections more than a hundred establishments have been chosen which can be visited during the Congress, either by individuals or by parties, under special guides. A guide book, which gives a short description of the institutes in three languages, will be published, so that members will be able to choose for themselves which institutes will be interesting for them. The Local Committee, under the presidency of Dr. Eilsberger, Privy Councillor in the Ministry of Public Worship and Education, is composed of representatives of the various Imperial and State Offices, the Council of Berlin, directors of different hygienic and medical, engineering and industrial colleges, and representatives of the Press.

Full particulars regarding the Congress can be obtained from Dr. Nietner, 9 W. Eichhornstrasse, Berlin.

THE ANNUAL MEETING OF THE NATIONAL VETERINARY MEDICAL ASSOCIATION.

THE Annual Meeting of the above will be held at the Royal Assembly Rooms, Great Yarmouth, on July 24, 25, and 26, 1907.

Papers have been arranged to be read and discussions opened by some of the leading members of the profession, on most interesting subjects.

The annual dinner will take place on the evening of July 24.

A sea trip has been arranged for the ladies on the afternoon of July 25.

A trip on the broads and a luncheon has been arranged for July 26, by the members of the Eastern Counties Veterinary Medical Association, while other entertainments are under consideration.

I should like to point out that hotel accommodation, &c., is good, and can readily be obtained at Great Yarmouth; and that July is one of the best months of the year at this place.

Excursion and tourist tickets are issued by all Railway Companies.

Applications for membership can be made to Mr. F. W. Wragg, Whitechapel, London.

I shall be only too pleased to send particulars, or any information with regard to hotels, boarding houses, &c., direct to those requiring them.

W. L. LITTLE,
GREAT YARMOUTH,
Hon. Sec. Provisional Committee.

THE ROYAL INSTITUTE OF PUBLIC HEALTH. DOUGLAS (ISLE OF MAN) CONGRESS, June 25 to July 5, 1907.

SECTION E.—VETERINARY HYGIENE AND COMPARATIVE PATHOLOGY.

Monday, July 1, and Tuesday, July 2, 1907.

President: J. B. Wolstenholme, Esq., F.R.C.V.S., Manchester.

Vice-Presidents: T. Eaton Jones, Esq., M.R.C.V.S.; J. McKinna, Esq., F.R.C.V.S., Huddersfield; W. Woods, Esq., F.R.C.V.S., Wigan.

Hon. Secretary: T. S. Atkinson, M.R.C.V.S., Douglas.

PRESIDENTIAL ADDRESS: J. B. Wolstenholme, F.R.C.V.S.

PAPER: "Milk." Professor Annett, Liverpool University. Discussion opened by J. W. Brittlebank, F.R.C.V.S., Public Health Department, Manchester.

PAPER: "Meat Inspection." Jas. A. Dixon, M.R.C.V.S., Public Health Department, Leeds Corporation. Discussion opened by W. King, M.R.C.V.S., Veterinary Inspector, London Metropolitan Market.

DISCUSSION: "The Qualifications of Meat Inspectors," opened by Wm. Field, M.P., Dublin.

WEDNESDAY, JULY 3.

12 noon: Address to the Congress by Sir John Cockburn, M.D., K.C.M.G., late Premier of South Australia.

It is requested that the names of those attending the Congress shall be sent as early as possible to the Secretary, Mr. Alexander Robertson, Town Clerk, Town Hall, Douglas, Isle of Man.

CRUSADE AGAINST MOTOR OMNIBUSES. ARE THE POLICE TOO SEVERE?

Company Without a Vehicle Running.

Motor omnibus companies are face to face with a crisis. Hundreds of omnibuses which in the ordinary course of events would be earning money on the streets have been ordered into garage for "alterations."

There is a strong feeling that police supervision is being pushed to extremes. A few instances were related to a *Daily Mail* representative by the secretary of one of the motor omnibus companies.

"I will take the case of an omnibus we prepared and sent up for inspection," he said. "The first complaint was that the top rail was half an inch too low. We remedied this and sent the omnibus up again. The police then complained that the off-side seats were not sufficiently forward by two inches. Even this was remedied.

"A third time the vehicle was dispatched for inspection. Then objection was taken to the back seat. It was constructed to carry three persons. The police ordered that it should be shortened and made into an ordinary seat for two persons. That was done to the satisfaction of the authorities. Judge of our surprise, therefore, when, after making all these alterations, we were told the omnibus would not be passed, as it was too noisy. Such are the difficulties we have to contend with."

The police officials have stopped the entire service of the London Standard Motor Omnibus Company. All the omnibuses have been ordered back to the garage on the ground that they are too noisy. A similar decree has been issued in regard to the "Ensign" omnibuses, controlled by the same company. "At this moment," said the secretary of the company to a representative of the *Daily Mail* yesterday, "we have not the power to run a solitary omnibus. We are not earning a penny."

Secretary's Gloomy View.

A gloomy view of the situation is taken by the secretary of the London General Omnibus Company. In an interview yesterday he stated that motor omnibuses would never be a commercial success until an omnibus is produced that will run noiselessly and cost less in working expenses. "A motor omnibus costs from £600 to £800," he said, "and its life is about three and a half years. The working expenses are very heavy, and the repairs run away with a very large sum. This, of course, means that a lot of money has to be taken before we can even clear expenses."

On the other hand, the Vanguard Company is most optimistic. An official of the company said, however, that the strictures of the police were very severe, and as illustrating this, remarked that whereas three months ago the company had 250 cars on the road, at the present time they have only 185 running. The remaining sixty-five were in garage undergoing alterations. Still, by conforming to the police regulations it was hoped the business would continue to be a highly profitable one. The manager of the London Power Omnibus Company is of the same opinion.

In other quarters it is felt that until the fares have been revised there will never be commercial prosperity.—*Daily Mail.*

Translations and Extracts.

HOW TO TELL THE AGE OF EGGS.

THIS is usually done by looking at the size of the air chamber at the large end against a light. The quantity of air increases with the age of the egg.

The Poultry Society of Saxony have brought to notice a more scientific plan, based on the fact that the egg floats in a different position in water according to its age. A fresh egg will float nearly horizontally, at five days its long axis will form an angle of about 20° with the horizon, at eight days 45°, at fourteen days 60°, at twenty-one days 75°, and at thirty days it floats upright.

The Society recommend the use of a graduated glass measure by which the age of an egg can be determined with scientific accuracy.

(*Le Semaine Vétérinaire.*)

THE TEMPORARY DISAPPEARANCE OF THE PARASITE OF "NAGANA" IN INFECTED DOGS.

BY G. ROUX AND L. LACOMME.

RODET AND VALLET have shown that in animals infected with "nagana" that the spleen is an active agent in the destruction of the parasite. A dog that was infected with the *Trypanosoma Brucei* was given a subcutaneous injection of 20 cc. of a 1 to 3 emulsion of ox spleen and salt solution, which caused the parasite to disappear for several days.

In the author's experience an abscess always formed, and the question arises whether the disappearance of the organism was not connected with it. They propose to carry out a series of experiments, and hope that a number of repeated injections of spleen emulsion will cause the parasite to permanently disappear from infected dogs.

(*Comptes rendus de l'Academie des Sciences.*)

REPORT ON CONTAGIOUS DISEASES AMONGST ANIMALS IN GERMANY FOR 1905.

THE loss in animals that died or had to be destroyed on account of contagious disease during the year under report has risen from 9,925,414 frs. in 1904 to 10,445,427 frs. The principal diseases are:—

	1904	1905
Swine plague and septicæmia	4,379,535 frs.	5,097,600 frs.
Rouget	3,057,682 ,,	2,750,017 ,,
Anthrax	1,375,560 ,,	1,576,427 ,,
Glanders	592,556 ,,	501,391 ,,
Black quarter	452,465 ,,	461,179 ,,
Rabies	37,491 ,,	39,276 ,,
Small pox	37,491 ,,	17,600 ,,
Pleuro-pneumonia	30,111 ,,	1,934 ,,

These figures do not include loss from isolation, disinfection, restriction in movement, &c.

Compensation from Imperial revenues was 278,718 frs., against 307,500 frs. in 1904; from provincial revenue, 2,038,599 frs., against 1,944,736 frs. in 1904.

Anthrax.—There were 6,133 cows, 172 horses, 5,308 oxen, 509 sheep, 13 goats, 131 pigs; 114 in human beings, of which 3 were veterinary surgeons, 1 an importer of meat, and 1 a farrier; 16 died.

Black Quarter.—There were 1,668 cases in oxen, against 1,666 in 1904, 3 horses and 20 sheep. The chief infected localities were Schleswig 640, Munster 135, Schwelen 126. In Bavaria 9,837 animals were vaccinated, with 22 deaths; in Baden 599.

Rabies.—867 cases, against 1,043 in 1904; of these there were 724 dogs, 85 oxen, 22 horses, 13 sheep, 3 cats and 2 goats. The frontier districts, such as Eastern Prussia, Saxony and the Rhine provinces, were the worst.

The number of persons bitten was 368, against 365 in 1904, 307 in 1903, and 250 in 1902. Out of these, 323 persons, or 87·8 per cent., were treated at the Berlin Pasteur Institute; 11 died, of which 3 were bitten in the face, 2 in the right, and 6 in the left, hand. Of the persons who died only three had been treated, and with two of them it was not commenced for twenty-one days, and death took place during its course. The death rate was 0·93 per cent. of those treated, against 1·5 per cent. in 1904, and 17·8 per cent. amongst those that were not treated.

The report mentions a fact which, unfortunately, is only too common. A dog bit a person, and three days afterwards was declared by a veterinary surgeon to be healthy. The dog died shortly afterwards and the brain was sent to the laboratory for examination; the person was treated, but died forty-eight days afterwards.

Glanders.—509 cases, against 461 in 1904; 21 cases were discovered at the slaughter house.

Foot and Mouth Disease.—18,662 cases, viz., 9,303 oxen, 6,046 sheep, 3,131 pigs, and 182 goats. On November 15, 1905, the empire was declared free from this disease.

Pleuro-Pneumonia.—1 case occurred at Grimma, in Saxony.

Sheep Pox.—704 cases in thirty-two different flocks. The disease was imported from Russia.

Genital Exanthema.—7,338 oxen and 224 horses.

Sheep Scab.—56,393 cases in 1,203 flocks.

Rouget.—52,961 cases, against 57,789 in 1904; of these, 40,741 (77 per cent.) died or were destroyed. In two instances the disease was transmitted to men.

Swine Plague.—160,862 cases, against 89,890 in 1904 and 73,655 in 1903. Of these there were 75,520, or 45 per cent., deaths.

Fowl Cholera.—55,639 cases.

Fowl Plague.—837 cases.

One hundred and twenty-two thousand and ninety-eight oxen were imported from Denmark and tested with tuberculin, giving 1,035 reactions (0·8 per cent.). Out of 119,803 animals slaughtered at the abattoirs 29,632, or 25 per cent., were tuberculous.

(*Bearbeitet im Kaiserlichen Gesundheitsamt in Berlin.*)

COMMINUTED FRACTURE OF THE PASTERN IN A HORSE AFTER AN INJECTION OF COCAINE.

NOTE PRESENTED BY M. DOUVILLE, ALFORT VETERINARY SCHOOL, TO THE PARIS CENTRAL VETERINARY MEDICAL SOCIETY.

GENTLEMEN,—I have the honour to bring to the notice of the members of the Society, a specimen of a comminuted fracture of the pastern bone of a horse that took place after receiving an injection of cocaine.

The animal was a light draught gelding, aged about 13, and a good mover. He was brought to the College on July 21, suffering from lameness of the off fore limb of about two months' standing. The lameness was remittent, improving with work, but never altogether disappearing. In the stable he pointed with the lame leg and scraped his litter under himself; at a trot he went short, appeared to be tied in at the shoulder, and had lost his former freedom of action. There was no pain shown in the foot on pressure, but the heels were high and contracted and the frog atrophied. There was diffused periostitis over the fetlock and pastern, which were larger in circumference than the opposite one, but the part was not painful when handled. The rest of the limb and the near one were normal.

Notwithstanding the osteitis, I suspected navicular disease, and for diagnostic purposes made an injection of cocaine over the course of the plantar nerves, below the fetlock joint. Ten minutes afterwards the horse was exercised on a tan track and went sound.

The owner was advised to have neurotomy performed, to which he agreed, but as it was not convenient to do it at once he desired to take the animal home. He was warned to take him carefully at a walk, but disregarded this advice and started off at a trot. He only went about one hundred yards when the horse suddenly stopped, being unable to put any weight on the off fore leg, the fetlock of which was displaced forward and downwards towards the ground.

A fracture of the large pastern bone was diagnosed and the animal was destroyed, but unfortunately the specimen was not sent to me for six days afterwards, and it then was in such a condition that a complete examination was impossible. The bone was broken into seven or eight pieces, the largest of which were still in contact with each other. The lower end of the metacarpal bone was split across in two places that joined together in a V-shape, and in the internal glenoid cavity on the upper surface of the pastern bone there was a large ulcer. Both the cartilage and the superficial layer of bone were eaten away, and there were also the lesions of dry arthritis present. The front and inner part of the fetlock bone was rough and porous in texture, on close examination it was found that osteoporosis had commenced; the lower portion of the bone was healthy and normal.

No doubt the fracture was caused by the injection of cocaine, for such accidents, although rare, are not altogether unknown. Several have been reported from Germany, and M. Coquot mentions one in which, to all appearances, the bone was healthy, whereas in this case it was diseased. I do not think that it had been previously split before the final fracture took place, for it is well known that any alteration in the texture of bone predisposes it to fracture.

In this case the suspension of the pain, and possibly the excitement caused by the cocaine, caused the animal, in an unguarded moment, to

trot out on the hard ground with his former free-going action, which was too much for the diseased bone to stand. This case, however, does not in the least lessen the value of subcutaneous injections of cocaine for diagnostic purposes, it only shows that until the effects disappear the animal must be used with great caution and kept off the hard road.

(Recueil de Médecine Vétérinaire.)

COLIC IN ARMY HORSES.

BY M. L. DUPAS, V.S., FRENCH ARMY.

M. DUPAS considers that under certain conditions all the causes that predispose to colic are to be found during the annual manœuvres. The work is severe and irregular, the food and water is often of inferior quality, and the hours not those that the horses are accustomed to in their stables. They are picketted out in the open, exposed to the variations of the weather and are very frequently over worked. Under these conditions he thinks that any horse is liable to colic, but, curious to relate, in his experience, cases of colic under these conditions are less frequent than when the horses are in barracks. In a carefully worked out table he shows that the average number of cases of colic in army horses is less during the month of September, "the season when manœuvres are held in the French army," than at any other time of the year, and a point that he advances to further strengthen his case is that in 1899, when no manœuvres were held, the average was the same throughout the year.

According to M. Dupas, the chief causes of colic in army horses are want of exercise, and irregular and excessive work. He points to the frequency of cases of colic on Mondays, holidays, and amongst sick horses in infirmaries.

On the contrary, open-air life with regular and sufficient work exercises a beneficial effect on the digestive functions and diminishes the liability to colic, and even at manœuvres, in the author's experience, cases are generally found to take place on those days on which the horses are not working. M. Dupas even goes further, as he says—"In my experience, removing horses out into the open air will diminish epidemics of colic in the same way as it will epidemics of infectious disease, and this appears to be an argument in favour of a microbic influence in the production of diseases of the digestive system."

This appears to be almost pushing the theory to extremes. Most town practitioners' experience is that severe attacks of colic will take place in animals at work that from the very nature of their employment are not likely to enjoy an idle life. There is no doubt much truth in M. Dupas's observations, but it is impossible to regard rest as a predominant cause of colic; it can only be looked upon as a single factor in a large question, of which unfortunately but little is known.

Review of a paper read before the Paris Central Veterinary Medical Society, December 6th, 1906.

(Recueil de Médecine Vétérinaire.)

FIBRO-PLASTIC NEPHRITIS IN CALVES.

BY DR. BLIECK.

THE author has made a series of observations on this alteration of the kidney, which Rieck considers is due to embolic multiple nephritis and to which Kitt has given the name of fibro-plastic nephritis. He reviews the opinions of Ostertag that it is caused by infection and is sarcomatous; Kabetz, that it is hæmorrhagic nephritis, the first stage of fibro-plastic nephritis; Vaerst and Guillebeau, that it is the remains of embryonic tissue, and Basset that it is from infection through the blood current.

At Nimegue during the year 1902—1903, 3 per cent. of the fat calves that were killed at the abattoirs had diseased kidneys, and in 1904, 6 per cent. In addition, thirty kidneys, that to all appearances were normal, were examined under the microscope, and out of these five were found to be diseased. This would go to show that 6 per cent. were diseased, or, if the alterations visible on microscopic examination are counted, 58 per cent.

Dr. Blieck has divided the result of his observations into groups—(1) Kidneys in which there were clearly defined white patches; (2) In which there were white patches and general alteration of the parenchyma; (3) In which both these alterations as well as hæmorrhage were present.

Of group No. 1 he gives the following types: (*a*) the lesions scattered over the substance of the gland in small patches. (*b*) In large patches. (*c*) With white patches and depressions on the surface of the kidney, over the region of the lesion. (*d*) The kidney contracted and shrivelled up.

Group 2 he sub-divides into classes: (*a*) the kidney hypertrophied and œdematous, but no patches visible to the naked eye. (*b*) Kidney enlarged, with small white patches.

According to the Nimegue statistics, the lesions of chronic nephritis are chiefly seen in fat calves, and white kidneys in calves of from ten to fourteen weeks of age. The author again divides Classes 1 and 2 into localised and diffused nephritis. When the white patches are localised there are usually, in addition, patches of interstitial nephritis with infiltration into the interstitial connective tissue of mono- and poly-nuclear leucocytes, which sometimes penetrate into the urinary tubes. The malpighian corpuscles remain for a considerable time intact, but the epithelial lining of the canaliculi desquamate, and in the latter stages the connective tissue becomes fibrous, and causes the contraction previously mentioned to take place. The author has, however, never seen an abscess form.

In Group 3 there is hæmorrhage in the vicinity of the white patches; but in many cases it is very small in quantity, so much so that it may escape notice altogether. These hæmorrhagic points are usually of recent formation, and there is no pigmentary deposit in their vicinity. They are also seen in the horse and pig, but more usually in fat calves.

Blieck arrives at the following conclusions, which differ from those of Vaerst and Guillebeau:—(1) The lesions in the kidneys do not disappear with the lapse of time, but remain in the form of cicatrices. (2) The visible lesions are not due to arrested development of the

renal tissue, as they are never seen in very young animals. (3) The predominant lesion consists of infiltration of the interstitial connective tissue with leucocytes. (4) The leucocytes gain entrance to the urinary tubes, and are also frequently found in the epithelium. (5) The epithelial lining undergoes degeneration and desquamates in the form of cylindrical casts. (6) These casts, together with granules, are found in the urine. (7) There are no urinary tubes in process of formation, as has been stated by Vaerst and Guillebeau. (8) The urine contains a large number of leucocytes, and frequently a certain amount of albumin.

The cause of the disease is obscure, but the author is of opinion that it is not of microbic origin. He has never discovered an organism, and the result of inoculation experiments has been negative. The disease sometimes assumes a distinctly epidemic character. The author is inclined to think that it is caused by high feeding in preparing young animals for the butcher, in which process toxins are formed.

He does not think the flesh is unfit for food, always provided there are no traces of disease about the umbilicus or joints which would point to the existence of navel ill.

(*Tijdschrift voor Veeartsenijkunde.*)

Correspondence.

THE DISCOVERY OF "SPIROCHÆTÆ" IN CANINE VENEREAL TUMOURS.

To the Editors of the VETERINARY JOURNAL.

DEAR SIRS,—In your February number there is a note stating that Prof. Mettam has found "Spirochætæ" in the case of contagious venereal tumour of dogs.

Thinking that it would interest you to know that Dr. James Ewing, of Cornell Medical College, had found "Spirochætæ" as long ago as May, 1906, I am sending you under separate cover his article on so-called "Infectious Lymphosarcoma of Dogs," which will give you full particulars.

Veterinary Infirmary,
107 W. 37th Street,
New York.

Truly yours,
T. G. SHERWOOD.

[The interesting communication from Dr. Sherwood is taken from the *Journal of Medical Research*, and was published in September, 1906. We hope to give an abstract of the article in the July number of the VETERINARY JOURNAL.—ED.]

THE SANITARY CONFERENCES.

To the Editors of the VETERINARY JOURNAL.

SIRS, I have recently received copies of the preliminary arrangements made by the Royal Sanitary Institute and the Royal Institute of Public Health for their forthcoming Annual Congresses, which are to

be held during two consecutive weeks at the end of June and the beginning of July, the former in Dublin, and the latter in Douglas, Isle of Man.

In the case of the Royal Sanitary Institute, I observe a change from recent programmes in the omission of any section referring to veterinary hygiene, or the inspection of food or food products. Amongst the titles of the papers I also fail to find any which have reference to subjects of interest affecting our professional work. That being the case, I cannot help wondering how it is that veterinary societies and veterinary surgeons are asked to support the conference. I agree with the principle that the members of the veterinary profession should support these congresses, and where possible should attend these conferences, where subjects are brought forward in which their opinions might be of service to the community at large; and I do not see that it is absolutely essential to have a special section devoted to veterinary inspectors and delegates. In fact, these subjects could well be included in the section of sanitary science and preventive medicine; and I think that better results might accrue from our taking part in discussions on such subjects in a mixed assembly. Our opinions would have more far-reaching effects by being ventilated amongst people who have usually been conspicuous by their absence from the veterinary sections.

The Congress of the Royal Institute of Public Health is, as we have already stated, to be held at Douglas, Isle of Man, from June 29th to July 5th inclusive. At this Congress there is the usual section devoted to "Veterinary Hygiene and Comparative Pathology," under the able presidency of Mr. Wolstenholme, of Manchester. I trust that it will be possible for a good number of veterinary inspectors and delegates to be present, and that they will make their presence felt by the value of their contributions in the way of papers and discussions. It is also to be hoped that the officials of the Institute will make better arrangements for the accommodation of the section than they have done on recent occasions, and that we shall not hear complaints again on these grounds. Printed copies of the papers to be discussed should be handed to all the members present, or, better still, sent on in advance if possible. In that way only can a really good discussion on any paper be carried out.

I am, Dear Sir,
Yours faithfully,
A Recent Delegate.

New Instruments and Appliances.

Messrs. Huish and Co., of 12, Red Lion Square, London, W.C., have recently made a pair of bitch forceps to my suggestions.

The instrument consists of a tube, with two fixed rings at one end for the fingers. A central rod plays through the tube, and is split at one end, each end being provided with fenestrated spoon-shaped blades, thus forming the pair of forceps. By pushing forward the central rod the forceps expand, and by pushing forward the tube the forceps come together. When the forceps are in position the tube is

pushed forward until a grip of sufficient strength is obtained, when the thumb-screw at the end of the tube is tightened, so securing the grip.

The two advantages of the Instrument are: First, the size of the

tube always remains the same, thus possessing a great advantage over the expanding shanks of ordinary forceps. Secondly, when a grip is obtained it is made sure of by means of the small thumb-screw, and the entire attention of the operator can be given to the delivery of the fœtus.

I enclose illustration.

Yours faithfully,

F. CHAMBERS.

Royal Dick Veterinary College, Edinburgh.

Books and Periodicals, &c., Received.

"Charts of the Diseases of the Horse," by C. Gresswell, M.R.C.V.S. (Everett and Co.); "The Sense of Touch in Animals and Man," by W. Kidd, M.D.; "The Elements of the Practice of Comparative Medicine," by F. T. Barton, M.R.C.V.S., and G. Gresswell, M.A., L.R.C.P., &c. (Everett and Co.); Bureau of Animal Industry, Twenty-second Annual Report, Bulletin No. 38, Index No. 137, and Circular No. 102; Department of Agriculture and Technical Instruction for Ireland; Medical Officer of Health, Newcastle-on-Tyne, "Report on Tuberculosis"; Journal of the Royal Army Medical Corps; Transvaal Agricultural Journal; Department of Agriculture, Canada; Royal Institute of Public Health; Rhodesian Journal; Ceylon Agricultural Journal; Recueil de Médecine Vétérinaire.

Letters and Communications, &c.

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